

INTEROFFICE CORRESPONDENCE

DATE: January 21, 1991 PCK-10-91
TO: All Custodians of Health & Safety Practices
FROM: P. C. Koza, ^{for} Health & Safety (H&S) Documentation, T452A, X7616
SUBJECT: MANUAL CHANGE NOTICE

Please place this correspondence immediately after the Title Page in your Health & Safety Practices Manual.

Effective February 1, 1991, the following change will apply:

In order to provide better service to the Operations Managers and the plant, the function of H&S Area Engineers shall be assumed by H&S Area Management. The terms "H&S Area Engineers"/"H&S Area Engineering" shall no longer be used.

The following procedures in the Health & Safety Practices Manual are affected by this change:

- Section
- 1.01 Document Control
 - 1.02 Plan For As Low As Reasonably Achievable (ALARA)
 - 2.02 H&S Area Engineer/Area Safety Teams Functions and Responsibilities
 - 2.03 Operational Safety Analysis (OSA)
 - 2.04 Employees Working Alone
 - 2.05 Completed Job Review
 - 2.06 Red Tag Procedure
 - 2.07 Health & Safety (H&S) Work Request Priority System
 - 2.09 Use of Production Equipment for Development Tests or Experiments
 - 2.10 Administration of H&S Design Review
 - 2.11 Job Safety Analysis
 - 2.12 Controlled Deactivation of Alarms
 - 6.01 Excavation Permit
 - 6.03 Unattended Equipment Operation Permit.
 - 6.04 Confined Space Entry Permit
 - 6.05 Radiological/H&S Work Permit
 - 7.05 Breathing Air
 - 9.02 Storage and Disposal of Nonplutonium Metal Fines
 - 9.09 Safe Handling of Asbestos
 - 9.10 Transfer of Hazardous Liquids
 - 10.01 Entering Posted Areas
 - 10.02 Building Indoctrination and Reindoctrination



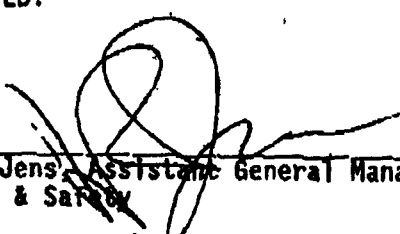
1/309

- 12.01 Occupational Safety Program
- 12.04 Industrial Robots and Robotic Systems
- 13.04 Beryllium Protection
- 15.03 Safety Interlocks and Safety Limiting Devices
- 17.02 Raschig Rings for Criticality Control
- 18.02 Personnel Contamination Control Requirements for Radiologically Controlled Areas
- 18.06 Glovebox Gloves, Boots and Bags
- 22.01 Exits (Means of Egress)
- 24.01 Safety Responsibilities for Construction Contractors
- 26.01 Safety Analysis Report (SAR) Program
- 31.03 Housekeeping
- 31.08 Roofing Operations
- 31.10 Welding Permits
- 31.11 Transfer and Storage of Pyrophoric Plutonium for Fire Safety
- 31.12 Transfer and Storage of Pyrophoric Metals Other Than Plutonium for Fire Safety
- 32.01 Handling and Storage of Flammable and Combustible Liquids for Fire Safety
- 34.04 Application of Floor Paint and Sealers

If you have a question about a responsibility previously held by H&S Area Engineering, please contact Jack Weaver X7571 or David Sweet X2397, H&S Area Management.

elr

APPROVED:


J. P. Jens, Assistant General Manager
Health & Safety

Date 12/1/91

cc:

C. J. Barker
G. S. Hyatt
G. D. Johnson

HEALTH AND SAFETY PRACTICES
Table of Contents

pg1
 December 13,2002

I.D. Number	Title	Effective date	REV
	Manual Change Notice (PCK-10-91)	01/21/91	
2.00	OPERATIONAL REQUIREMENTS		
9.00	MATERIAL HANDLING AND STORAGE		
9 02	Storage and Disposal of Nonplutonium Metal Fines	CANCELLED	
		05/14/02	
	Flagging Letter pck-10 91	02/01/91	
18.00	RADIATION PROTECTION		
PRO-I83-HSP-18 05	Administration, Inspection and Control of Radiation Generating Devices Superseded by PRO-1430-RSP-10.02 (Effective 8/19/02)		
1-I81-HSP-18 16	Glovebag Practices	07/30/96	1
	98-DMR-000161	03/23/98	
	DCF-1	08/03/98	
	DCF-2	02/02/00	
	DCF-CHG-18 16-1-3	08/15/02	1
30.00	FIRE PROTECTION POLICY, PROGRAMS, ORGANIZATION		
1-PRO-122-HSP-30 01	Program Administration Superseded by MAN-129-FPPM		
31.00	FIRE PREVENTION		
1-PRO-125-HSP-31 02	Electrical Precautions Superseded by MAN-129-FPPM		
PRO-1065-HSP-31 04	Controlling Introduction Of Combustibles Superseded by MAN-129-FPPM		
PADC-1992-00635			

HEALTH AND SAFETY PR/ICES
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pg2
 December 13,2002

I.D. Number	Title	Effective date	REV
PRO-1063-HSP-31 06	Fire Prevention Inspections Superseded by MAN-129-FPPM		
1-PRO-124-HSP-31 08	Roofing Operations Superseded by MAN-129-FPPM		
1-PRO-123-HSP-31 09	Portable Fuel-Fired Heaters Superseded by MAN-129-FPPM		
PRO-W13-HSP-31 10	Hot Work Superseded by MAN-129-FPPM		
PRO-W89-HSP-31 11	Transfer and Storage of Plutonium for Fire Safety	02/16/01	3
	DC-01	10/31/01	
	DC-02		
	DC-03	06/12/02	
	DC-04	08/12/02	
1-X46-HSP-31 12	Transfer and Storage of Pyrophoric Metals Other Than Plutonium for Fire Safety Superseded by MAN-129-FPPM		
1-E57-HSP-31 13	Occupancy Restriction Order Superseded by MAN-129-FPPM		
PRO-369-HSP-31 14	Employee Response to Fire Superseded by MAN-129-FPPM		
PRO-872-HSP-31 15	Control of Generated Flammable Gas	12/20/00	2
	DC-01	08/24/01	
	DC-02	10/26/01	
	DC-03	03/27/02	
	DC-04	06/12/02	
	DC-05	10/24/02	
32 00	FIRE AND LIFE SAFETY		
PRO-1053-HSP-32 01	Flammable and Combustible Liquids Code For Fire Safety Superseded by MAN-129-FPPM		
1-PRO-184-HSP-32 09	Exits (Means of Egress) Superseded by MAN-129-FPPM		
33.00			
PRO-X48-HSP-33 01	Fire Barriers		

<u>I.D. Number</u>	<u>Title</u>	<u>Effective date</u>	<u>REV</u>
	Superseded by MAN-129-FPPM		
34.00	FIRE PROTECTION		
PRO-N20-HSP-34 01	Fire Protection System Impairments, Deficiencies And Abandoned In Place	12/10/01	3
	DC-01	12/18/01	
	DC-02	03/08/02	
PRO-1048-HSP-34 02	Portable Fire Extinguishers Superseded by MAN-129-FPPM		
PRO-V60-HSP-34 06	Compensatory Measures and Fire Watches For Fire Protection Systems	10/15/00	2
	DC-001	05/01/01	
	DC-02	12/20/01	
	DC-03	05/15/02	
PRO-1061-HSP-34 07	Glovebox Fire Protection Superseded by MAN-129-FPPM		
1-X92-HSP-34 10	Fire Dampers Canceled	2/20/02	

① DCF Originator W E. Dick/ /s/ 6-18-01
 Pnnt Sign Date

Organization Radiological Engineering

Phone/Pager/Location x2557/212-6766/T130B

② (Authorizes processing of request)
 Responsible
 Manager J. W. Mahaffey/ /s/ 6-21-01
 Pnnt Sign Date

Organization Radiological Engineering

Phone/Pager/Location X2131/212-5965/T130B

③ Assigned SME Rick Johnson
 Print Name

Organization Radiological Engineering

Phone/Pager/Location X5280/212-6293/T130B

④ Glovebag Practices
 Document Title

1-181-HSP-18 16 Rev 1
 Existing Document Number and Revision

N/A
 New Document Number and Revision (if Applicable)

⑤ Type of Document

☐ Policy ☒ Procedure (indicate type) ☐ Instruction

☐ Mgt Directive ☒ Technical ☐ Alarm ☐ Job Aid

☐ Manual ☐ Administrative ☐ Other ☐ Other

If "Other" is checked please specify type N/A

⑥ Type of Modification

☐ New ☒ Change

☐ One Time Use Only ☐ Minor

☐ Revision ☒ Major

☐ Cancellation

⑧ Proposed Modification

Globally delete Appendix 1, Criticality Safety Engineer Glovebag Checklist reference
 Delete reference to BSM-558

Insert in Appendix 1 a Records Processing Table

Modify List of Effective Pages and Table of Contents to correspond to amended pages

Globally replace reference to DOE/EH 0256T DOE RCM with MAN-102-SRCM, Rocky Flats Environmental Technology Site Radiological Control Manual (Site RCM) as appropriate

Globally fix reference title to 4-D99-WO-1100 by adding the word "procedure" and to reference 1-M12-WO-4034 by adding "solid & manual" to title

Page 47, Step 15[3] Replace the word "Appendix 1 is" with "Criticality Safety Evaluation requirements are"

Page 47, Step 15[2] Modify text by adding Appendix 2 and 3, and replacing 1-V41-RM-001 with Appendix 1, Records Processing Guide

⑨ Justification

Appendix 1 and the Reference Section refer to Criticality Safety Evaluation BSM-558. This Criticality Safety Evaluation has been withdrawn. The procedure still requires coordination with the Criticality Safety Engineer to determine the applicable Criticality safety controls.

As per the current Site Document Requirements Manual (SDRM) process a Records Processing table is required. Per SDRM process as identified by PRO-815-DM-01

DOE RCM is guidance document contractual held to Site RCM through Radiation Protection Plan

Editorial change

Same as the first justification listed above

Change consistent with 2nd justification listed above

External (Technical) Review

⑩ Reviewing Organization	⑪ Signature or Name of Reviewer	⑫ Date	⑩ Reviewing Organization	⑪ Signature or Name of Reviewer	⑫ Date
Subject-Matter Expert	/s/ R G Johnson	6/26/01	371/374 Closure	/s/ D K Gonzales P O C	7/10/01
707/776/777 Closure	/s/ B Moore P O C	6/12/02	771 Closure	/s/ C Morgan P O C	6/11/02
RISS	/s/ P V Thomas P O C	6/19/02	Criticality Safety	/s/ B Krogfuss	6/5/02
Mat'l Stewardship	/s/ B Grant P O C	6/5/02	SE&QP	/s/ G Debner P O C	6/20/02
QA	/s/ D Gillespie	4/5/02			
RE	/s/ R R Weedon	6/20/02			

⑬ Special Reviews (NOTE: Other Special Reviews may be required. See PRO-815-DM-01 for more information.)

ISR (Number or Not Required) SISRC 02-09

TI Alignment (signature or N/A) N/A
 Sign Date

Reviewed for Classification
 (If Required N/A if not)

By Enc Swanson

Date 7-15-2002 U/NU

⑭ Approval (Completed to approve changes and cancellations only. New documents and revisions are approved by signature on the document cover page.)

Approval Authority R. J. Sexton /s/ D. J. Davidson for 7/2/02 Effective Date 8/15/02
 Pnnt Name Sign Date

④

Glovebag Practices
Document Title

1-181-HSP-18.16, Rev. 1

Existing Document Number and Revision

⑨

⑩

Proposed Modification	Justification
As result of comment resolution the following are added	
Pg 5 Section 1, 1 st para Add "(Site)" after the RFETS title	Identify initially in the document as an acceptable abbreviated terminology
Globally, where appropriate replace RFETS title with the word "Site"	Acceptable abbreviated terminology
Pg 6 Modify the definition in Section 4 for Fissile material	For consistency with MAN-130-MDA definition
Pg 6 & 47, Section 4 & 16 Replace SG-607 with SPEC-13090-0855, Radiation Protection (Glovebags) Also on page 6 add the words " and the design considerations reside in the Engineering Design Package"	SG-607 no longer exist, the fabrication requirements are specified in SPEC-13090-0855, Radiation Protection (Glovebags) and the design considerations are part of the Engineering Design Package
Pg 7 Section 5 1 Add "(Criticality Safety Engineer or Criticality Safety Officer)" to the section title	Further clarifies who is Cnt Safety
Pg 7 Section 5 1 Replace the words "Provides evaluation" with "Identified criticality safety controls"	More appropriately described the function of Crit Safety in the context of this procedure
Pg 9 Step 8[2], last bulleted item Revise last sentence to "Calculations are documented in accordance with 1-V51-COEM-DES-210, Site Engineering Process Procedure"	Update reference consistent with current site requirements
Pg 10 Step 8[5] Add the phrase "or potentially hold plutonium," to text and CS symbol	Good practices and consideration to ensure that system or components get needed review by Cnt Safety
Pg 10 Step 8[6] Change the word "Determination" to "Identify" and CS symbol	Remain consistent with previous change on page 7 on Cnt Safety responsibilities
Pg 27 Section 11 2 Note 1 Change "nuclear safety" to "nuclear and criticality safety"	Language more consistent with current site practices/requirements
Pg 41 Step 13 3[4] Delete step	During this type of emergency (cut hand) in a gloveba does not make sense for operators to have to worry about NMSLs/CSOLs There is no applicable NMSLs/CSOLs that would restrict use of a bag in this scenario
Pg 47 Add 1-V51-COEM-DES-210 reference to section 16	Remain consistent with referencing documents per PRO-815-DM-01
Pg 47 Section 16 Remove strike-outs and replace Site RCM with documents full designation and title Also the document designated as 1-V41-RM-001 is re-titled as "Records Management Manual"	Update the reference list and clean up document.
OTHER INFO	
Editorial Review and Validation None	Per PRO-815-DM-01, Section 5 3 3 an editorial review and validation are optional for changes to a procedure/technical document.
Change in the reviewer list on DCF from title page of the procedure	Per PRO-815-DM-01, Step 5 3 2(4), the Responsible Manager has identified the SME and organizations that are affected by this change The reviewer list identified by the DCF is a result of Project base organization structure and, as well as groups identified as having the discipline-specific expertise necessary to ensure that the document is accurate and usable
USQ Program Review SES-RFP-02 1943-KGH	

DOCUMENT CHANGE FORM (DCF)

⑦ DCF # DCF-02① DCF Originator JRWINKEL JRWINKEL 2/2/00
Pnnt Sign DateOrganization CRIT SAFETYPhone/Pager/Location 2036/212-3240/TS86B② Responsible Manager R.C. DIKEMAN R. DIKEMAN 2/2/00
Pnnt Sign Date
BY JRM PER TCOrganization 371 OPERATIONSPhone/Pager/Location 3562/212-5322/321③ Assigned SME JRWINKEL JRWINKEL 2/2/00
Pnnt Sign DatePhone/Pager/Location 2636/212-3240 TS86B④ Prescreen/SES/USQD Number N/AIndependent Safety Review N/A④ GLOVE BAG PRACTICES
Document Title1-781-HSP-18.16 REV. 1

Existing Document Number and Revision

N/A

New Document Number and Revision (If Applicable)

⑤ Type of Document

- ☐ Policy ☐ Directive ☒ Manual ☐ Technical Standard
☐ Procedure ☐ Instruction ☐ Job Aid ☐ Other _____

⑥ Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Editorial
☐ Revision ☐ Intent
☐ Cancellation ☒ Non-Intent

⑨ Effective Date 02/02/00 Expiration Date _____

⑩ Item ⑪ Page ⑫ Step ⑬ Proposed Modification

⑩ Item	⑪ Page	⑫ Step	⑬ Proposed Modification
LOEP	2	N/A	UPDATE LOEP
①	47	Ref	BSM-554 CHANGE TO BSM-558
②	48	1st APP. 1	BSM-559 CHANGE TO BSM-558

⑩ Item ⑭ Justification

- ① FIX TYPOGRAPHICAL ERROR
② FIX TYPOGRAPHICAL ERROR

⑮ Reviewing Organization ⑯ Name of Reviewer ⑰ Date ⑱ Reviewing Organization ⑲ Name of Reviewer ⑳ Date

⑳ Approval Authority R C DIKEMAN R. DIKEMAN BY JRW PER TC 02/02/00
Pnnt Sign Date

DOCUMENT CHANGE FORM (DCF)

DCF # 1

(1) F Originator: Doug Ervin 7/23/98 (4) Glovebag Practices
 Print Sign Date

Organization SSOCPhone/Pager/Location 6195 / 212-5991 / T130B

1-181-HSP-18 16, Rev 1

Existing Document Number and Revision

(2) Responsible Manager: Terry Vaughn 7/23/98 (5)
 Print Sign Date

Organization SSOCPhone/Pager/Location 6357 / 212-3257 / T130B

(3) Assigned SME: Dave Werow 7-25-98
 Print Sign Date

Phone/Pager/Location 5517 / / T130B

(8) Prescreen/SES/USQD Number N/A

Independent Safety Review N/A

(5) Type of Document
☐ Policy ☐ Directive ☒ Manual ☐ Technical Standard
☒ Procedure ☐ Instruction ☐ Job Aid ☐ Other

(6) Type of Modification
☐ New ☐ One Time Use Only ☒ Change
☐ Revision ☐ Editorial
☐ Cancellation ☐ Intent ☒ Non-Intent

(9) Effective Date 8/13/98 Expiration Date

(10) Item	(11) Page	(12) Step	(13) Proposed Modification
	2	LOEP	Update LOEP
	8	6	Add "Ventilation requirements (e.g., glovebox or filter plenum differential pressure, flow rates, etc.) for glovebags shall be included in the work control document. Changes to the work description including but not limited to scope or work approach/methods or HEPA filter/ventilation requirements shall require re-approval of the work control document by a minimum of the job supervisor and Radiological Engineering"
	8	5 6	Add "Walk down each glovebag job to ensure that the glovebag-to-work seal design is appropriate to support the glovebag and intended task"
3	9	8(2)	Add "• HEPA filter and airflow/ventilation requirements Calculation shall be documented IAW the Conduct of Engineering Manual"
4	10	8(4)	Add "Walkdown the glovebag job to ensure the glovebag-to-work surface seal design is appropriate to the glovebag and intended work"

Item	Justification
All are to clarify the responsibilities of personnel involved	each new 8/24/98

(15) Reviewing Organization	(16) Name of Reviewer	(17) Date	(15) Reviewing Organization	(16) Name of Reviewer	(17) Date
STE	<u>D. Winkler</u>	<u>7/23/98</u>			
SSOC	<u>Terry Vaughn</u>	<u>7/23/98</u>			
RMRS	<u>Shirley</u>	<u>7/23/98</u>			
DCI	<u>E. B. Winkler</u>	<u>23 JUL 98</u>			
Wackenhut	<u>C. E. [Signature]</u>	<u>7/23/98</u>			

(18) Approval Authority: W G Zurliene 7/29/98
 Print Sign Date

03/14/97

APPENDIX 3

Page 1 of 3

Page 1 of <u>2</u> DOCUMENT MODIFICATION REQUEST (DMR)			25 DMR No. 98-DMR- 000161
1 Name/Phone/Pager/Location W E Dick/ 8407/ 4174 /T130B			2 Date 02/03/98
3 Existing Document Number and Revision 1-181-HSP-18 16 Revision 1			4 Document Type <input type="checkbox"/> Policy <input type="checkbox"/> Manual <input type="checkbox"/> Directive <input checked="" type="checkbox"/> Procedure <input type="checkbox"/> Instruction <input type="checkbox"/> Job Aid <input type="checkbox"/> Other _____
5 Document Title Glovebag Practices			
6 Item	7 Page	8 Step	9 Proposed Modification
1	2	LOEP	Modify the List of effective pages to match attached affected page
2	8	7	Modify Step [1] to 'Ensure that all personnel involved in the actual installation and use of glovebags receive Radiological Glovebag Training, and are qualified and authorized to work with glovebags'
3	8	7	Delete supplemental text below Step [1]
4	8	7	Modify Step [2] after the word "evolution" to "are qualified and trained in the inspection and evaluation of radiological conditions of glovebags"
5	11	9 1	Modify Step [5] by deleting the bulleted items and ending the step at "Appendix 2 or 3," and remove wording "the following sections"
6	13	9 1	Change in Step [18] the word "Operations" to "Safety"
7	27	11 2	Change above Step [2] the user identifier word from "Operations" to "Safety"
8	28	11 2	Modify Step [4] after the THEN statement to "perform investigation survey for possible spread of contamination"
9	32	12 2	Add to Step [1][E] the word "twist"
10 Item	10a. Justification (Reason for Modification, EJO# TP#, etc)		
1	Per SDRM		
2-4	Modified to reduce redundancy Procedural steps direct the Job Supervisor/ RCT Supervisor to ensure that the training is provided on Glovebag Practices Specifics related to course number and training content is covered by Training		
5	No need for additional descriptives Appendix 2 and 3 are self-explanatory		
6, 7, 11, 12, 14	Title nomenclature has changed		
8	Text simplified, self explanatory and it directs the RCT to perform an investigation survey Reference to RCT-05 03 are being removed as a result of the rebaselining effort of the Rad Safety procedures		
11 <input checked="" type="checkbox"/> Process (Complete Blocks 13-22) (print/sign/date) <i>[Signature]</i> <input type="checkbox"/> Do not Process (state reason in Block 10a) T L Vaughn /			
12 Assigned SME/Phone/Pager/Location J B Powell/3998/5945/T130B			13 New Document/Rev. No (if new or changed) N/A
Complete either Section 14a or 14b, as applicable			
14a Type of Complete Modification <input type="checkbox"/> New <input type="checkbox"/> Revision <input type="checkbox"/> Cancellation <input type="checkbox"/> One-Time-Use		14b Changes (check the applicable boxes) <input type="checkbox"/> Intent Change <input checked="" type="checkbox"/> Nonintent Change <input type="checkbox"/> Editorial Correction <input checked="" type="checkbox"/> Regular <input type="checkbox"/> Interim Approval Request - Needed for Immediate use (30-day limit for obtaining final approval)	
Additional Attributes <input type="checkbox"/> Temporary <input type="checkbox"/> One-Time-Use <input type="checkbox"/> Limited Distribution			
15 ERM Change Control Board Required <input type="checkbox"/> Yes <input type="checkbox"/> No (Applicable only to new procedures revisions and intent changes)			
List the reviewing organization in Block 16 After concurrence has been obtained on the Comment Sheet, enter the name of the reviewer followed by /s/ in block 17 If the reviewer indicated No comments, the review signature constitutes concurrence Enter the date concurrence is obtained in Block 18			
16 Reviewing Org	17 Name of Reviewer for that Organization	18 Date	16 Reviewing Org
Rad Eng (STE)	/s/ B. Powell	2/5/98	
Rep for Rad Safety	/s/ P. D. Worley	3/11/98	
RMRS	/s/ H. L. Bluder P.O.C. RMRS	2/12/98	
DynCorp	/s/ D. Levinson	2/12/98	
K-H	/s/ W. Zurkane	2/11/98	
SSOC	/s/ R. A. Eschenbaum	2/10/98	
Wackenhut	/s/ K. Foster P.O.C. Wackenhut	2/11/98	
19 Prescreen/SES/USQD Number not required		20 Independent Safety Review Meeting and Date not required	
21 <input type="checkbox"/> Process Policy Action (This block required for Policies only) <input type="checkbox"/> Do not Process (state reason in Block 10a)		Reviewed by V P w/ responsibility for the Policy Program (print/sign/date)	
22 Approval Authority signs after obtaining ALL required signatures <i>Kaiser -Hill</i> <i>W. A. Jenkins</i> <i>W. Zurkane</i> <i>3/12/98</i>		23 Effective Date 3-23-98 24 Expiration Date	

03/14/97

APPENDIX 3

Page 3 of 3

DMR (continuation sheet)

Page 2 of 2

Print or Type all information (except signatures) Process documents in accordance with the RFETS Site Documents Requirements Manual

25 DMR No.
98-DMR-000161

3 Existing Document Number and Revision 1-I81-HSP-18 16, Rev 1			5 Document Title Glovebag Practices
6 Item	7 Page	8 Step	9 Proposed Modification
10	33	12 2	Modify Step [2][G] by deleting all the text after the word "Packaging"
11	41	13 3	Change the word in Step [2] from "Operations" to "Safety"
12	42	13 5	Change the word in Step [4] from "Operations" to "Safety"
13	46	14	Delete from Step [11], the first bullet and the word "Inside the Protected Area" from the second bullet
14	47	15	Change above Step [1] the user identifier word from "Operations" to "Safety"
15	47	15 ,16	Change reference from "1-N71-HSP-6 07" to "3-PRO-229-RSP 01 01"
16	47	15 , 16	Change reference from "1-77000-RM-001" to "1-V41-RM-001"
17	47	16	Delete reference to "Solid Waste Packaging Outside the Protected Area"
18	47	16	Delete the word "Inside the Protected Area" from the title of document 4-D99-WO-1100
19	47	16	Change procedure reference "4-K62-ROI-03 01, Performance of Surface Contamination Surveys" to "3-PRO-165-RSP-07 02, Contamination Monitoring Requirements"
20	47	16	Delete reference to "4-S11-ROI-05 03, Response to a Contamination Release"
10 Item	10a Justification (Reason for Modification)		
9	The word was added to clarify the step		
10, 13, 17 18	4-C77-WO-1101 no longer exist, and the title of document 4-D99-WO-1100 has changed		
15	Instructions for Radiological Safety personnel are contained in RSP 01 01		
16	To reflect current procedure designation		
19	Specifics to contamination monitoring requirements for surveys are contained in RSP 07 02 This is due to reference change		
20	Reference is being deleted as a result of item 8 The document is no longer reference in the procedure		
22 Approval Authority signs after obtaining ALL required signatures (print/sign/date) (Not required for New procedures and Revisions)			
/see first page/			

11

Rocky Flats Environmental Technology Site

1-I81-HSP-18.16

REVISION 1

GLOVEBAG PRACTICES

APPROVED BY

R. G. Card
Acting President,
Kaiser-Hill Company, L L C

/ R G Card
Print Name

7/30/96
Date

Responsible Organization Radiological Engineering Effective Date 07/30/96

CONCURRENCE BY THE FOLLOWING DISCIPLINES IS DOCUMENTED IN THE PROCEDURE HISTORY FILE

Analytical Services
Criticality Safety
DynCorp of Colorado, Inc
Environmental Restoration/Waste Management & Integration
Environmental Safety & Health, and Quality
Radiological Engineering
Radiological Operations
Safe Sites of Colorado
Site Operation and Integration

USE CATEGORY 3

ORC review SORC-96-022 (06/25/96)

The following have been incorporated in this revision
95-DMR-001277

This procedure supersedes procedure 1-I81-HSP-18 16, Revision 0,
dated 8/29/94

Periodic review frequency 3 years from the effective date

Reviewed for Classification/UCNI

By

Robert S. Cullen U/NU

Date

July 30, 1996

PAND-94-01787

LIST OF EFFECTIVE PAGES

<u>Pages</u>	<u>Effective Date</u>	<u>Pages</u>	<u>Effective Date</u>
1	07/30/96	42	03/23/98
2	08/15/02	43-45	07/30/96
3	07/30/96	46-48	08/15/02
4-10	08/15/02	49-52	07/30/96
11	03/23/98		
12	07/30/96		
13	03/23/98		
14-26	07/30/96		
27	08/15/02		
28	03/23/98		
29-31	07/30/96		
32	03/23/98		
33	08/15/02		
34-40	07/30/96		
41	08/15/02		

Total number of pages: 52

The following DCFs are active for this procedure

98-DMR-000161

DCF1

DCF2

DCF-CHG-18 16-1-3

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1. PURPOSE

This procedure provides the responsibilities and instructions to establish standardized methods for installing, using, and dismantling glovebags at the Rocky Flats Environmental Technology Site (Site)

This procedure implements the requirements of Title 10 Code of Federal Regulations Part 835 (10 CFR 835), Occupational Radiation Protection, MAN-102-SRCM, Rocky Flats Environmental Technology Site Radiological Control Manual (Site RCM), and cannot be changed without the approval of the Radiological Control Department

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2. SCOPE

This procedure applies to all personnel, contractors, and subcontractors at the Site

This procedure addresses the following topics:

- Containment selection and fabrication
- Containment installation and inspection
- General glovebag containment work practices
- Emergency situations
- Containment removal

This revision is a total rewrite, and revision bars are omitted. This revision supersedes 1-I81-HSP-18.16, Revision 0

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3. OVERVIEW

Glovebags are designed to contain contamination from open radioactive systems to within the smallest practicable volume. This point control of radioactive contamination has the following advantages:

- Decreases the surface area of components exposed to contamination.
- Minimizes radioactive waste.
- Reduces decontamination costs
- Facilitates conformance to as low as reasonably achievable (ALARA) principles

3. OVERVIEW (continued)

- Provides a physical barrier between the worker and radioactive contamination, allowing for less restrictive personnel protective equipment and improved worker efficiency.
- Provides continuity of containment during Zone I breaches

This procedure contains suggested or typical steps that may be performed differently and in a different sequence than as written. The steps and sequencing may be modified depending on the situation at hand and methods demonstrated in glovebag training and mockups.

4. DEFINITIONS

Further information on the definitions and acronyms included in this section can be found in the Rocky Flats Environmental Technology Site Radiological Control Manual (Site RCM) Glossary

Drape Drapes, consisting of plastic sheeting and nonelastic supports, are used to partially enclose a worksite as a backup for glovebags

Glovebag A transparent, portable, flexible confinement system designed to provide point control of radioactive contamination. These containments meet the physical and fabrication requirements for glovebags at Rocky Flats, as specified in SPEC-13090-0855, Radiation Protection (Glovebags) and the design considerations reside in the Engineering Design Package

Fissile Material A material of any nuclides capable of sustaining a nuclear fission chain reaction. For nuclear criticality safety purposes, such materials are composed of fissionable nuclides (e.g., plutonium-238, plutonium-239, plutonium-241, uranium-233, uranium-235), but may include non-fissionable nuclides. The definition does not apply to natural or depleted uranium

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5. RESPONSIBILITIES

5.1 Criticality Safety (Criticality Safety Engineer or Criticality Safety Officer)

Identifies criticality safety controls, as appropriate

5.2 Glovebag Designer

Determine glovebag specifications

Forward glovebag design to Glovebag User and Radiological Engineering for approval.

5.3 Glovebag Installer and User

Provide data for evaluation, as requested by Criticality Safety.

Assist in glovebag selection for the job to be performed

Fabricate, install, inspect, and remove glovebags.

Ensure Glovebag training is up-to-date

5.4 Job Supervisor

Initiates and reviews the Radiation Work Permit (RWP)

Ensures that Glovebag Installers and Users have received the necessary training.

Reviews glovebag installation and inspection.

Ensures that criticality safety requirements are followed and verified via inspection, as required

5.5 Radiological Control Technician (RCT)

Performs radiological surveys to support glovebag use

Performs daily or weekly containment inspections

5.6 Radiological Engineering

Consults with the Glovebag User and other appropriate personnel to evaluate glovebag containment requirements

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Performs the job walkdown, and determines inspection requirements Walk down each glovebag job to ensure that the glovebag-to-work seal design is appropriate to support glovebag and intended task

5.7 RCT Supervision

Reviews and approves glovebag installation and inspection.

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6. REQUIREMENTS

This procedure implements the requirements from Title 10 CFR 835 and Site RCM These requirements are contained in Articles 316, 342, 346, 453, 634, and 661 of the Site RCM

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Ventilation requirements (e g , glovebox or filter plenum differential pressure, flow rates, etc) for glovebags shall be included in the work control document Changes to the work description including but not limited to scope or work approach/methods or HEPA filter/ventilation requirements shall require re-approval of the work control document by a minimum of the job supervisor and Radiological Engineering.

7. TRAINING

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Job Supervisor

- [1] Ensure that all personnel involved in the actual installation and use of glovebags receive Radiological Glovebag Training, and are qualified and authorized to work with glovebags

RCT Supervisor

- [2] Ensure that RCTs involved in any glovebag evolution are qualified and trained in the inspection and evaluation of radiological conditions of glovebags

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8. INSTRUCTIONS—CONTAINMENT SELECTION

Several types of glovebag containments may be considered. Selection is based on available space, user recommendation, and work scope.

Job Supervisor and Radiological Engineering

- [1] Determine the need for engineering controls, such as glovebags, during review and job walkdown of RWPs and Integrated Work Control Program (IWCP) Work Packages

Glovebag Designer and Glovebag User

- [2] Consider the following, as applicable, when planning the glovebag application:
- Practicality of installation, size, and shape of component or piping to be contained in conjunction with work to be performed
 - Environmental conditions which could affect physical integrity of the containment, such as temperature of component (greater than 140°F), operating differential pressure, sharp-edged surfaces, component effluents, and possible effect of work in adjacent areas
 - Protection of glovebag for the duration of use
 - Method of supporting heavy equipment and components within the glovebag
 - Need for scaffolding at the worksite
 - Orientation to allow operator access to the component
 - Location of filters, drains, leads, and support services such as air, water, lighting, and air mover
 - Chemical compatibility of system contents and glovebag materials
 - HEPA filter and airflow/ventilation requirements. Calculations are documented in accordance with 1-V51-COEM-DES-210, Site Engineering Process Procedure

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8. INSTRUCTIONS—CONTAINMENT SELECTION (continued)

Radiological Engineering

- [3] Evaluate and determine the use of drape for situations that could meet any of the following conditions
- The system to be breached has the potential to or is expected to release more than one pint of solution into the glovebag
 - Items that could penetrate the glovebag, such as heavy objects, sharp instruments, or power tools, will be used inside of the glovebag.
 - The glovebag will remain installed for an extended period of time
- [4] Walk down each glovebag job to ensure that the glovebag-to-work seal design is appropriate to support the glovebag and intended task.

- (CS) [5] IF the systems or components to be contained hold plutonium or potentially hold plutonium, or other fissile materials,
THEN contact Criticality Safety

Criticality Safety

- (CS) [6] Identify the criticality safety requirements for glovebag use

Requirements may include the following.

- Size, shape, and location of drains and collection vessels
- System depressurization and evacuation of liquids, sludge, and vapors
- Lockout/Tag out of associated components
- Inspection frequency

- ~~[7] Use Appendix 1, Criticality Safety Engineer Glovebag Checklist, as necessary.~~

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9. INSTRUCTIONS—GLOVEBAG FABRICATION

9.1 Inspecting and Prefabricating the Containment

Radiological Engineering

- [1] Determine the required tests and inspections
- [2] Indicate which tests or inspections are required by initialing the corresponding block in the Req'd column of Appendix 2, Pre-Installation Inspection Checklist, and Appendix 3, Post-Installation Inspection Checklist
- [3] Specify any additional requirements in the Additional Requirements section of Appendix 2 or 3

Glovebag Installer

- [4] Ensure that the containment is prefabricated and inspected, to the extent practicable, outside of Radiological Areas
- [5] Inspect the parts in accordance with the items marked Req'd in Appendix 2 or 3 before erecting the glovebag

NOTE *Any clean air source may be used to inflate the glovebag*

- [6] **IF** the pressure test is **NOT** required, as shown on Appendix 2 or 3, **THEN** go to Step [20]

NOTE *The pressure test rig consists of a photohelic gauge and an air compressor, designed to inflate the glovebag and to automatically maintain the pressure in the specified range*

- [7] Connect the pressure test rig to a glove sleeve or other available opening on the glovebag

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9.1 Inspecting and Prefabricating the Containment (continued)

CAUTION

Over pressurization may result in glovebag failure.

- [8] **IF** pressure set points are specified in the IWCP work package or in Appendix 2 or 3,
THEN
- [A] Use a calibrated gauge to monitor pressure
- [B] Adjust setting as required
- [C] Go to Step [10]
- [9] **IF** a leak test is required and no pressure set points are given,
THEN pressurize the glove bag with enough air such that leakage can be detected
- [10] Slowly apply air to glove bag
- [11] **WHEN** the glovebag has been inflated to the specified pressure (if applicable),
AND has been allowed to stabilize for at least 3 min ,
THEN isolate the air supply.
- NOTE** *Re-inflation of the glovebag during leak testing to facilitate the location of all leaks is acceptable*
- [12] Inspect each seam of the glovebag for leaks by applying leak detection solution, and mark any leaks that are detected

9.1 Inspecting and Prefabricating the Containment (continued)

- [13] Use absorbents to remove any remaining leak detection solution from the glovebag
- [14] **IF** no leaks are detected,
THEN go to Step [20]
- [15] Use one or more of the following methods to repair leaks
 - [A] Apply adhesive-backed tape or hot glue to the problem area, on both the inside and outside of the containment
 - [B] Apply nonhardening caulk (3M Press-In-Place Caulk, Catalog No 2157, or equivalent) from the inside of the glovebag to problem areas of the glovebag seam
 - [C] Apply silicone sealant
 - [a] Work from inside the glovebag, and apply silicone sealant (RTV 162 or equivalent) to the inside surface of each leak
 - [b] Allow airflow through the glovebag while the silicone sealant cures for the time specified by the silicone sealant manufacturer.
 - [D] Implement other methods demonstrated in glovebag training class, or with approval from Radiological Engineering
- [16] Allow the air pressure test rig to inflate the glovebag to the specified test pressure
- [17] Inspect each seam and surface of the glovebag for leaks by applying leak detection solution, and mark any leaks that are detected
- [18] **IF** leaks are detected during the second test,
THEN consult Radiological Safety Supervisor

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9.1 Inspecting and Prefabricating the Containment (continued)

- [19] **WHEN** no more leaks are detectable,
AND the glovebag has held the specified test pressure for a total of at least
5 min ,
THEN disconnect the air pressure test rig

NOTE *A water test is only performed for glovebags that will be exposed to
liquids while in use*

- [20] **IF** a water test is specified in Appendix 2 or 3,
THEN perform the following test

- [A] Clamp the drain line
- [B] Introduce approximately 1 pint of clean tap water into the glovebag,
ensuring that no water is spilled on the outside of the glovebag
- [C] Manipulate the bag slightly to cause the water to puddle around any
lower penetrations or seals
- [D] Submerge the lower component seal
- [E] Mark any leaks
- [F] Dispose of water in accordance with Facility/Building Management
guidance
- [G] Rework and test any areas of noted leakage in accordance with
Radiological Engineering guidance

- [21] Initial the Accept or Reject column of Appendix 2 or 3 to indicate
performance of the required tests and inspections

9.2 **Installing Rubber Gloves**

Glovebag Installer

- [1] Determine which sleeves are to be used for gloves

NOTE 1 *To make sealing the containment to the component easier, gloves or access sleeves may be left uninstalled to provide an additional hand hole to work through*

NOTE 2 *Some sleeves are reserved for later installation of high efficiency filters, power leads, and transfer sleeves, as required*

- [2] Place the gloves near the corresponding sleeves
- [3] Ensure that the gloves are properly oriented for the task
- [4] Leave the membranes of reserved sleeves intact
- [5] Remove internal containment glove and component access sleeve membranes
- [6] Install each glove in accordance with the substeps illustrated in Figure 1, Installing Rubber Gloves

9.2 Installing Rubber Gloves (continued)

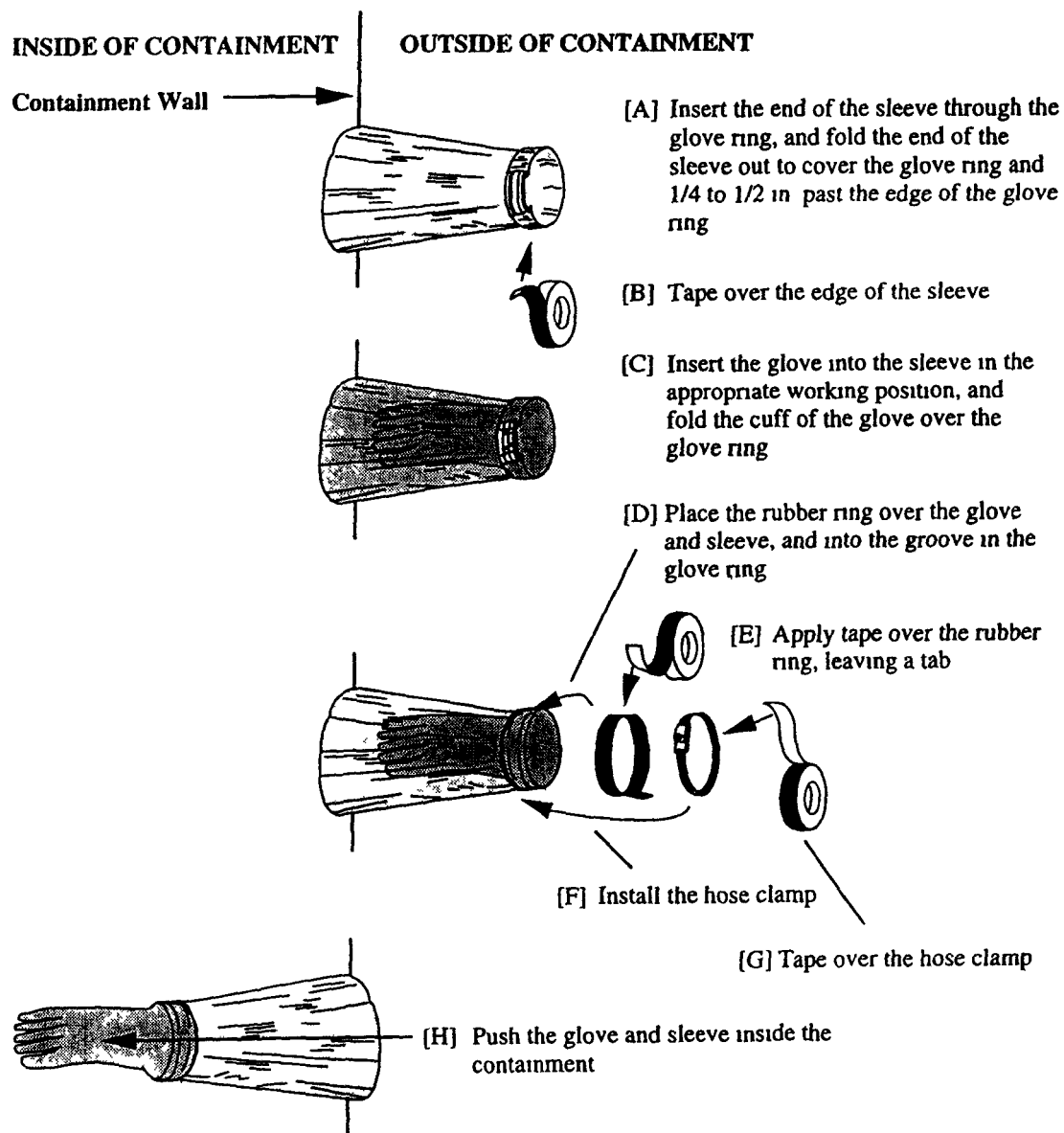


Figure 1, Installing Rubber Gloves

9.3 Installing the Drain

This section contains suggested or typical steps that may be performed differently and in a different sequence than as written

Glovebag Installer

- [1] Ensure that the component is drained and isolated from systems that could allow liquids to drain into the containment
- [2] Ensure that drain and collection vessel sizes comply with criticality safety requirements
- [3] Mark the drain location at the lowest point in the glovebag, ensuring that liquids will drain into the drain opening
- [4] Install the drain assembly in accordance with Figure 2, Typical Installation of a Drain Assembly

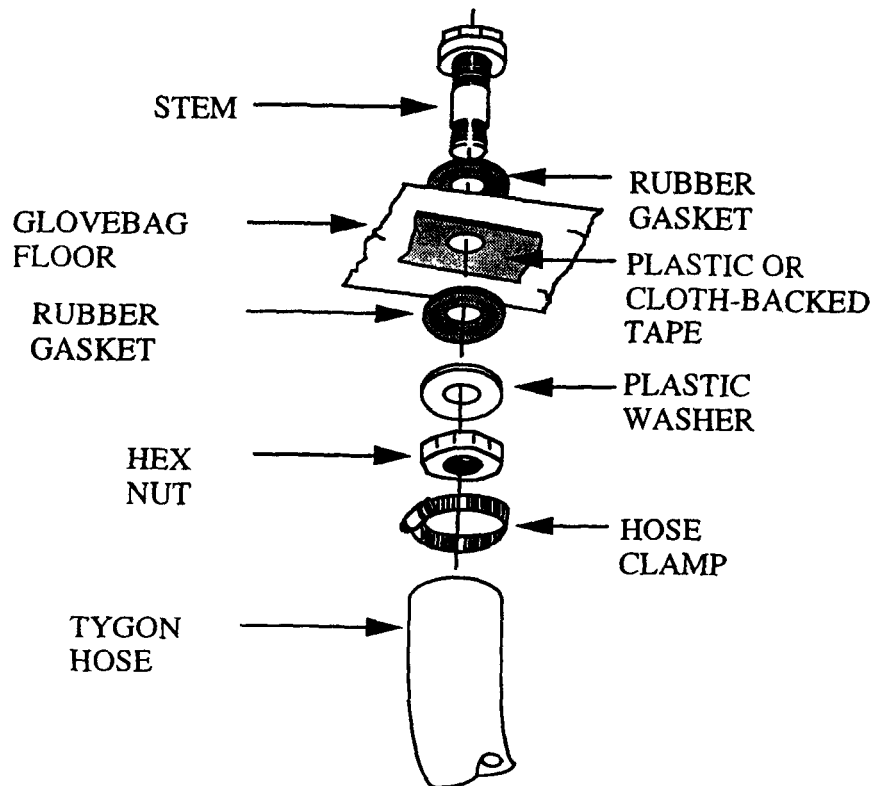


Figure 2, Typical Installation of a Drain Assembly

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9.3 Installing the Drain (continued)

- [5] Ensure that the collection vessel is secured to prevent tipping, and that all drain connections are clamped and taped to prevent leakage
- [6] Install a pinch clamp to the tygon hose for controlling liquid flow, as needed

9.4 Installing the High Efficiency Particulate Air (HEPA) Filter

Glovebag Designer

- [1] Determine if a filter is to be installed in the glovebag

NOTE *Multiple filters installed in parallel, larger filters, multiple filters installed in series, or alternate attachment methods may be required to meet special needs*

- [2] Determine the size of the HEPA filter to be used, based on job requirements
- [3] Ensure that Glovebag Installers are aware of any special installation requirements

Glovebag Installer

- [4] **IF** vent filters are used,
THEN ensure that the filters are 99.97% efficient to 0.3 micron particles

Respirator filters are not acceptable. HEPA filters are dioctylphthalate (DOP) tested to be 99.97% efficient to 0.3 micron particles

- [5] Install the filter in accordance with instructions from Radiological Engineering and Figure 3, Typical Wall Filter Installation, or Figure 4, Typical Sleeve Filter Installation

9.4 Installing the High Efficiency Particulate Air (HEPA) Filter (continued)

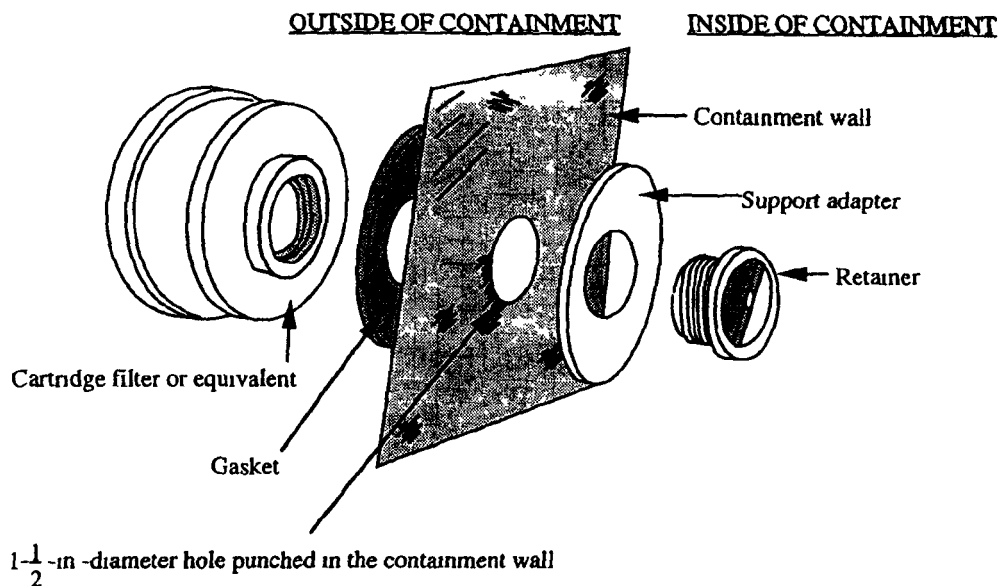


Figure 3, Typical Wall Filter Installation

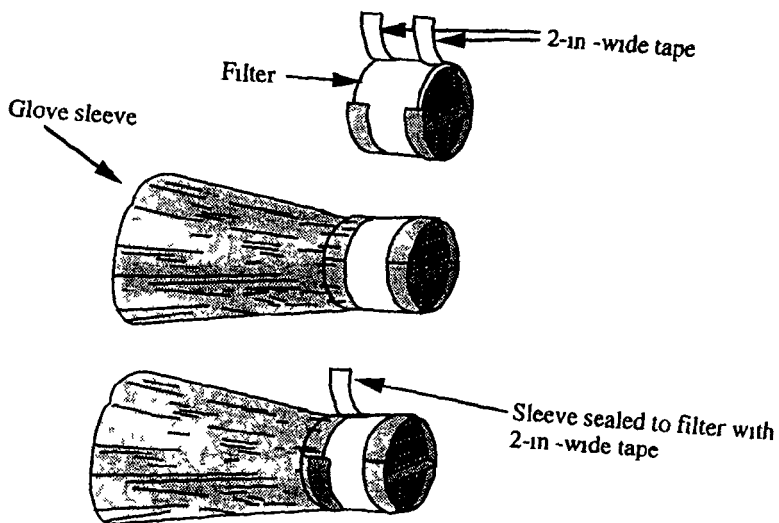


Figure 4, Typical Sleeve Filter Installation

9.5 Installing the Bag-out Cylinder and Bag

This section contains suggested or typical steps that may be performed differently and in a different sequence than as written

Glovebag Installer

- [1] Insert the end of the bag-out sleeve into the bag-out cylinder, as shown in Figure 5, Installing the Bag-out Cylinder and Bag
- [2] Pull the bag-out sleeve through the bag-out cylinder, and fold the end of the bag-out sleeve over the bag-out cylinder
- [3] Secure the end of the sleeve to the outside of the bag-out cylinder with 2-in -wide tape

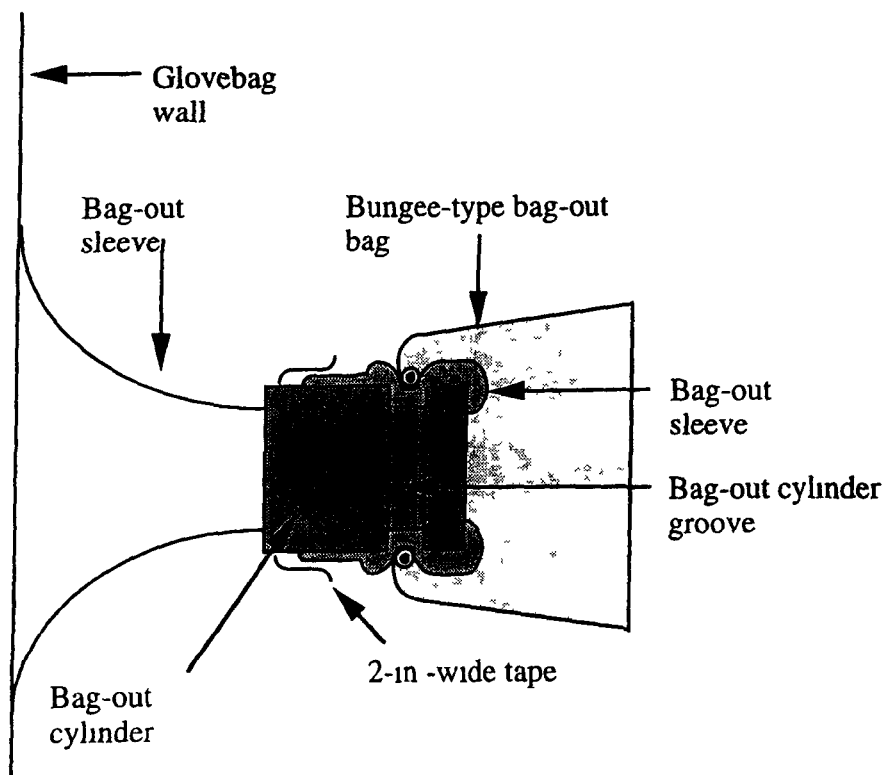


Figure 5, Installing the Bag-out Cylinder and Bag

9.5 Installing the Bag-out Cylinder and Bag (continued)

[4] **IF** a regular bag-out cylinder is used,
THEN

[A] Cut sleeving to the desired length, and place the sleeving over the open end of the bag-out cylinder

[B] Use 2-in -wide tape to secure the sleeving to the bag-out cylinder, as necessary, and to close the open end of the sleeving with a pigtail closure

[5] **IF** a grooved bag-out cylinder is used,
THEN

[A] Stretch the open end of a bungee-type bag-out bag over the open end of the bag-out cylinder

[B] Position the bungee-type bag-out bag so that the bungee cord fits into the groove near the end of the bag-out cylinder, and secure the bag-out bag to the bag-out cylinder, as necessary

10. INSTRUCTIONS—CONTAINMENT INSTALLATION

This section contains suggested or typical steps that may be performed differently and in a different sequence than as written

Glovebag Installer

- [1] Ensure that all component system and radiological pre-installation conditions defined in the RWP have been met
- [2] Use polysleeving or plastic tape to cover piping and component work surfaces inside the containment, except the areas being worked, to limit the spread of contamination
- [3] **IF** tape is used for covering piping or component surfaces,
THEN
 - [A] Apply tape in overlapping strips in accordance with Figure 6, Proper Method for Covering Piping and Components
 - [B] Do **NOT** spiral wrap pipes or components with tape

Spiral-wrapped tape is difficult and time consuming to remove
 - [C] Tab the end of the tape for easy removal

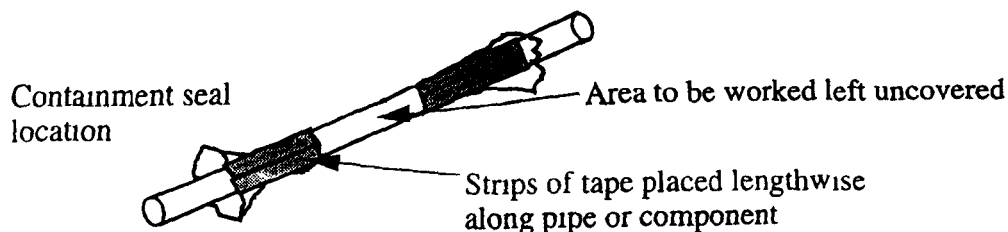


Figure 6, Proper Method for Covering Piping and Components

10. INSTRUCTIONS—CONTAINMENT INSTALLATION (continued)

- [4] Take necessary precautions (such as taping sharp edges and adequately supporting the glovebag with elastic rope) to prevent glovebag punctures or tears
- [5] Insulate the glovebag from thermally hot areas of the component
- [6] Install service lines (such as power cords or air supply lines) in the glovebag
 - [A] Ensure service lines enter from top or sides and are sleeved to the glovebag
 - [B] Secure service lines to prevent them from pulling loose, and ensure that the service lines are independently supported

NOTE *Tools may need to be modified (such as shortening a wrench with a large working radius) to allow for ease of use within the glovebag*

- [7] Place tools or supplies into the glovebag, as necessary, at any time prior to starting work
- [8] Position the containment on the pipe, component, or surface to be enclosed

NOTE *Containment-to-component seals may be either outside, inside, or both. In most instances, it is best to locate both seals inside the containment. Inside seals provide less component surface exposed to contamination, less component length required for installation, watertight seal on the component, and greater containment work volume*

- [9] Use tape to seal all interfaces between the containment and the equipment or area

10. INSTRUCTIONS—CONTAINMENT INSTALLATION (continued)

- [10] Work from inside the glovebag to seal the containment to vertical piping with an inside seal, as applicable, using Figure 7, Sealing Containments to Piping (Inside Seal), as a guide

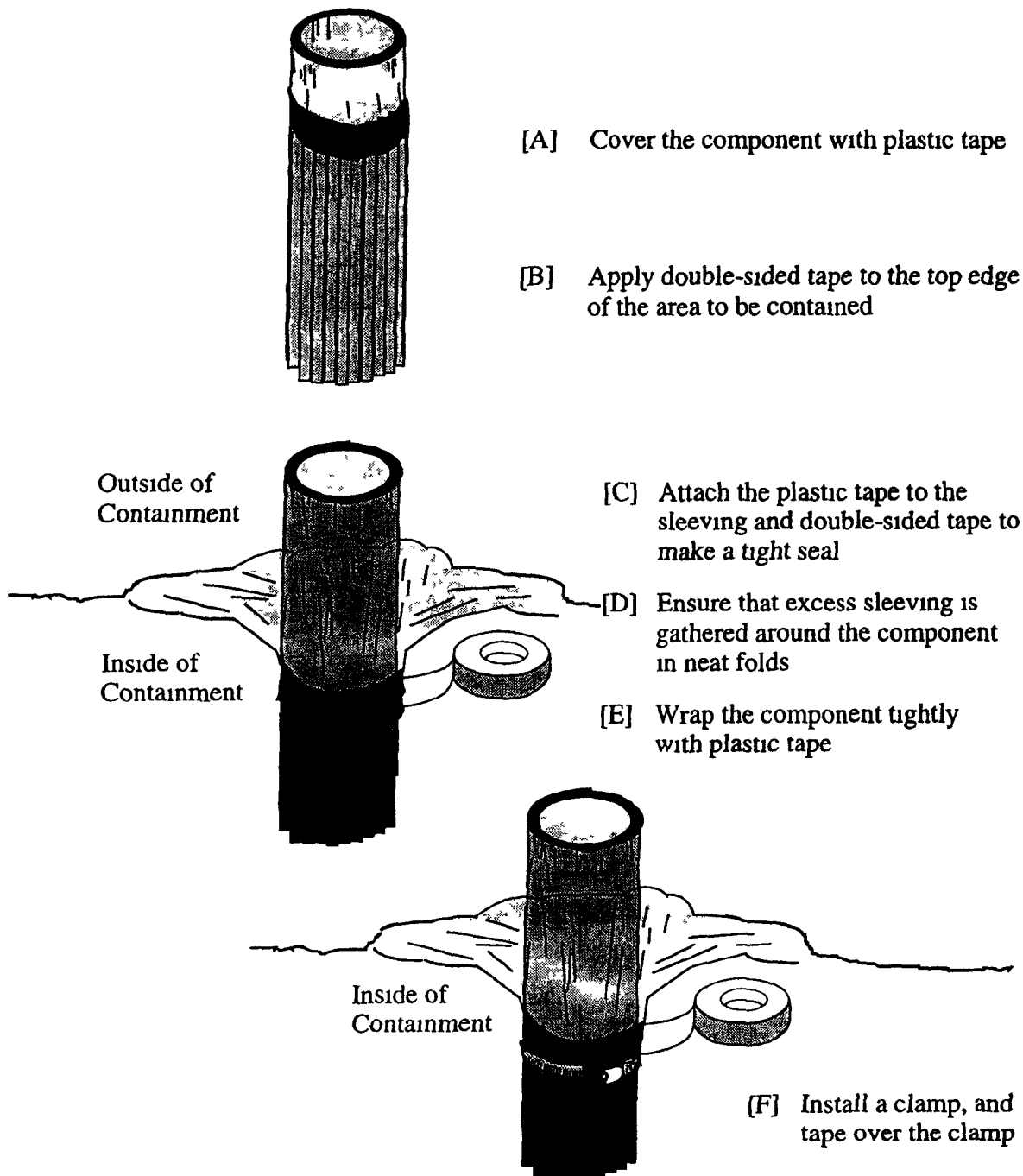


Figure 7, Sealing Containments to Piping (Inside Seal)

10. INSTRUCTIONS—CONTAINMENT INSTALLATION (continued)

- [11] Seal the containment to vertical piping with an outside seal, as applicable, using Figure 8, Sealing Containments to Piping (Outside Seal), as a guide

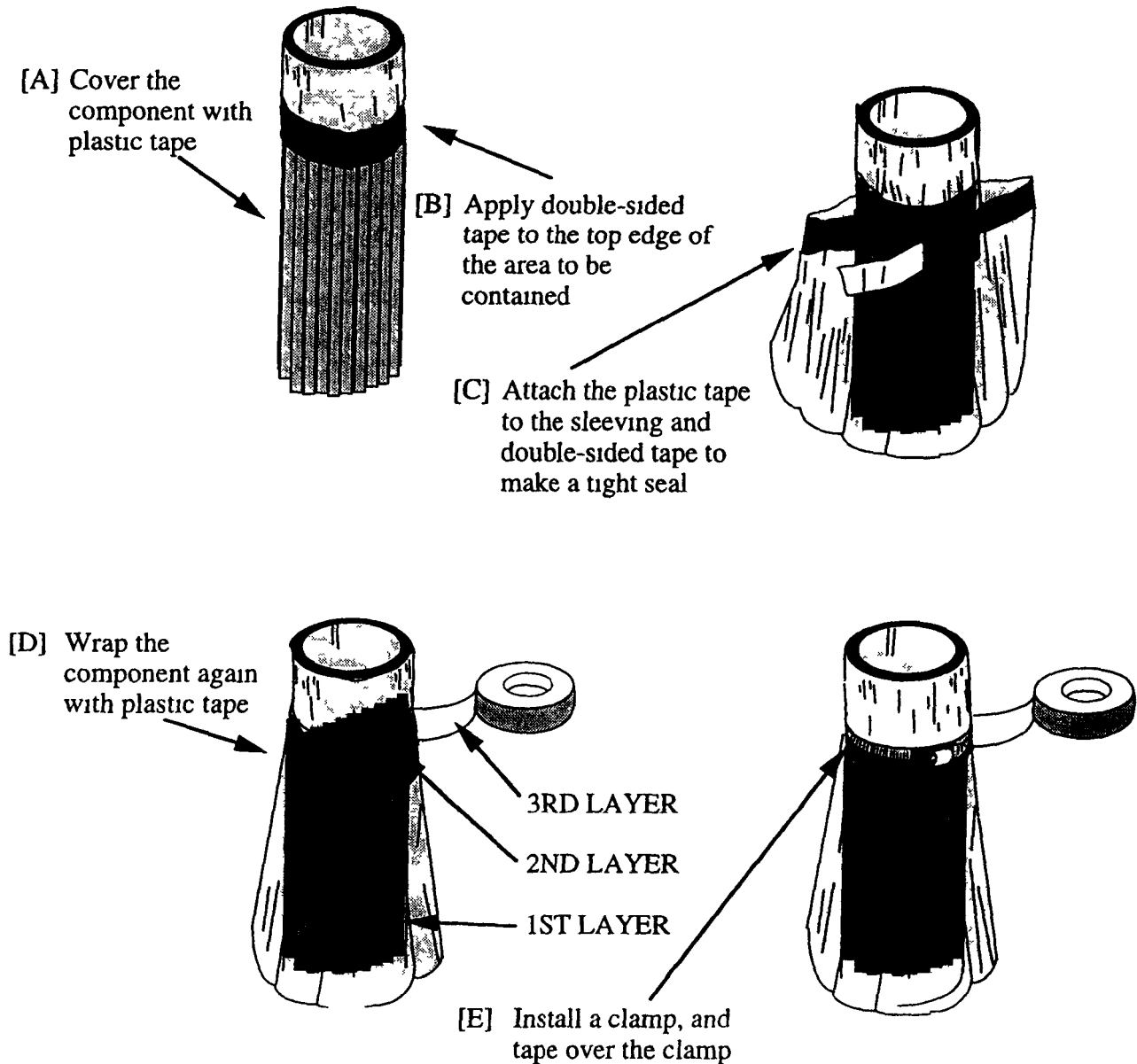


Figure 8, Sealing Containments to Piping (Outside Seal)

10. INSTRUCTIONS—CONTAINMENT INSTALLATION (continued)

[12] Install rubber gloves, as necessary

[13] **IF** the use of a drape is specified in Appendix 2 or 3,
THEN

- [A] Assess the area where the drape is to be installed, and determine the size of the drape needed to control the area under the glovebag and the most suitable location for the drape
- [B] Obtain a prefabricated drape or obtain plastic sheeting and grommets to make a drape
- [C] Install the drape, ensuring that the drape does not violate the building Nuclear Material Safety Limits (NMSLs) or Criticality Safety Operating Limits (CSOLs) and will not interfere with access to the glovebag
- [D] Inspect the drape to ensure the following
 - The drape is in compliance with the building NMSLs or CSOLs
 - The drape will adequately control the unexpected release of tools, materials, or contamination from the glovebag
 - The drape does not interfere with the safe use of the glovebag

11. INSTRUCTIONS—CONTAINMENT INSPECTIONS

11.1 Final Acceptance

Glovebag Installer

- [1] Ensure that each inspection or re-inspection required by Radiological Engineering has been performed and initialed as completed on Appendixes 2 and 3
- [2] **WHEN** all required tests and inspections have been completed,
THEN sign the Submitted block of Appendixes 2 and 3.

Job Supervisor and RCT Supervision

- [3] **WHEN** the Glovebag Installer has signed the completed Appendixes 2 and 3,
THEN:
 - [A] Resolve any questions or misunderstandings
 - [B] Sign on the bottom of Appendix 3 to indicate review and approval.

11.2 Daily/Weekly Containment Inspections

NOTE 1 *Use of liquids inside of the Radiological Area entails consideration in regard to nuclear and criticality safety and disposal of waste liquid.*

NOTE 2 *An example of the Glovebag Inspection Tag is included in Appendix 4, Glovebag Inspection Tag*

Radiological Engineering

- [1] Determine need for containment Inspections.

Glovebag Installer and Radiological Safety Supervisor

- [2] Initiate a Glovebag Inspection Tag
 - [A] Check (✓) that a daily inspection is required

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11.2 Daily/Weekly Containment Inspections (continued)

[B] Obtain the appropriate signatures

[C] Attach the tag to the glovebag or next to the glovebag

RCT

[3] Perform contamination surveys on and around the glovebag, and inspect the glovebag for the following conditions

- No visible damage to the containment (such as holes or tears)
- Containment is properly tied off
- Visibility is maintained
- No solution is standing inside the containment
- Sharp tools or items are not exposed such that they could penetrate the containment or gloves
- No excess material or equipment is present inside the containment
- The downdraft/vacuum cleaner hose and assembly is free of defects or deficiencies
- Activities outside the glovebag do not jeopardize the integrity of the glovebag

[4] IF discrepancies are noted during inspection which could have resulted in a possible release of radioactivity from the containment,
THEN perform investigation survey for possible spread of contamination.

[5] Indicate that this inspection has been performed and that the containment is satisfactory by signing the Glovebag Inspection Tag in the signature space and entering the employee number and date

[6] IF the containment is **NOT** to be used for work for a period of one or more days,
THEN perform one of the following:

[A] Leave the containment certified and continue with daily inspections

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11.2 Daily/Weekly Containment Inspections (continued)

[B] Reduce the daily inspection frequency to weekly

[a] Contact the Glovebag User for the area where the containment is installed to request that the daily inspection frequency be reduced to weekly

RCT Supervision

[b] Evaluate the containment and situation

[c] IF weekly inspection is warranted,
THEN fill out a new Glovebag Inspection Tag (Appendix 4),
and check (✓) that a weekly inspection is to be performed

[d] Attach the new weekly Glovebag Inspection Tag to the containment, leaving the original tag in place

NOTE *No work will be performed in the containment until the inspection frequency is upgraded to a daily inspection*

Glovebag User or RCT

[7] IF a containment on a weekly inspection schedule is to be used,
THEN

[A] Notify the RCT Supervisor responsible for the area

[B] Perform the glovebag inspection in accordance with Steps 11 2[2]
through 11 2[4]

[C] Fill out a new Glovebag Inspection Tag (Appendix 4), and check (✓)
that a daily inspection is to be performed

The containment may now be used for work again

[D] Attach the new daily Glovebag Inspection Tag to the containment,
leaving the original tags in place

12. INSTRUCTIONS—GENERAL GLOVEBAG CONTAINMENT WORK PRACTICES

This section contains suggested or typical steps that may be performed differently and in a different sequence than as written

12.1 Prerequisites and Precautions

Glovebag User

- [1] Ensure that one RCT has been assigned and is present at the jobsite during significant evolutions, such as making a breach of containment, taking a smear, or removing the containment

RCT and Glovebag User

- [2] Become familiar with possible emergency situations, and know the necessary responses described in Section 13, Emergency Situations

RCT

- [3] Ensure that the containment has been approved for use

Glovebag User

- [4] Ensure that any necessary equipment and supplies (such as extra gloves, plastic bags, and tape) are available at the jobsite

- [5] Wear personal protective equipment (PPE) as required by the RWP

Cotton gloves may be worn for comfort but cannot be considered as a layer of protective clothing

- [6] Protect the glovebag from any potential hazards (such as grinding or cutting)

- [7] Tape over any sharp edges that could puncture the containment

12.1 Prerequisites and Precautions (continued)

- [8] Support all attachments to the glovebag individually so as not to overstress the glovebag
- [9] Use only water, mild detergent, or water-based strippable paint to decontaminate glovebags
- [10] Protect the glovebag drain from becoming blocked
- [11] Do **NOT** use incandescent lights near plastic containment material because heat from lighting may melt the plastic

Flashlights or fluorescent lights may be used instead of incandescent lights

- [12] Do **NOT** step on the temporary drain or drain collection installations
- [13] Obtain Radiological Engineering concurrence before modifying any glovebag support
- [14] Ensure that downdraft unit is available at the jobsite, if necessary
- [15] Minimize the spread of contamination within the glovebag to reduce the extent of decontamination that will be necessary before glovebag removal

12.2 Bag-out and Bag-in Methods

Glovebag User

- [1] **IF** tools or supplies are to be added to the glovebag,
THEN complete the steps illustrated in Figure 9, Tool Insertion

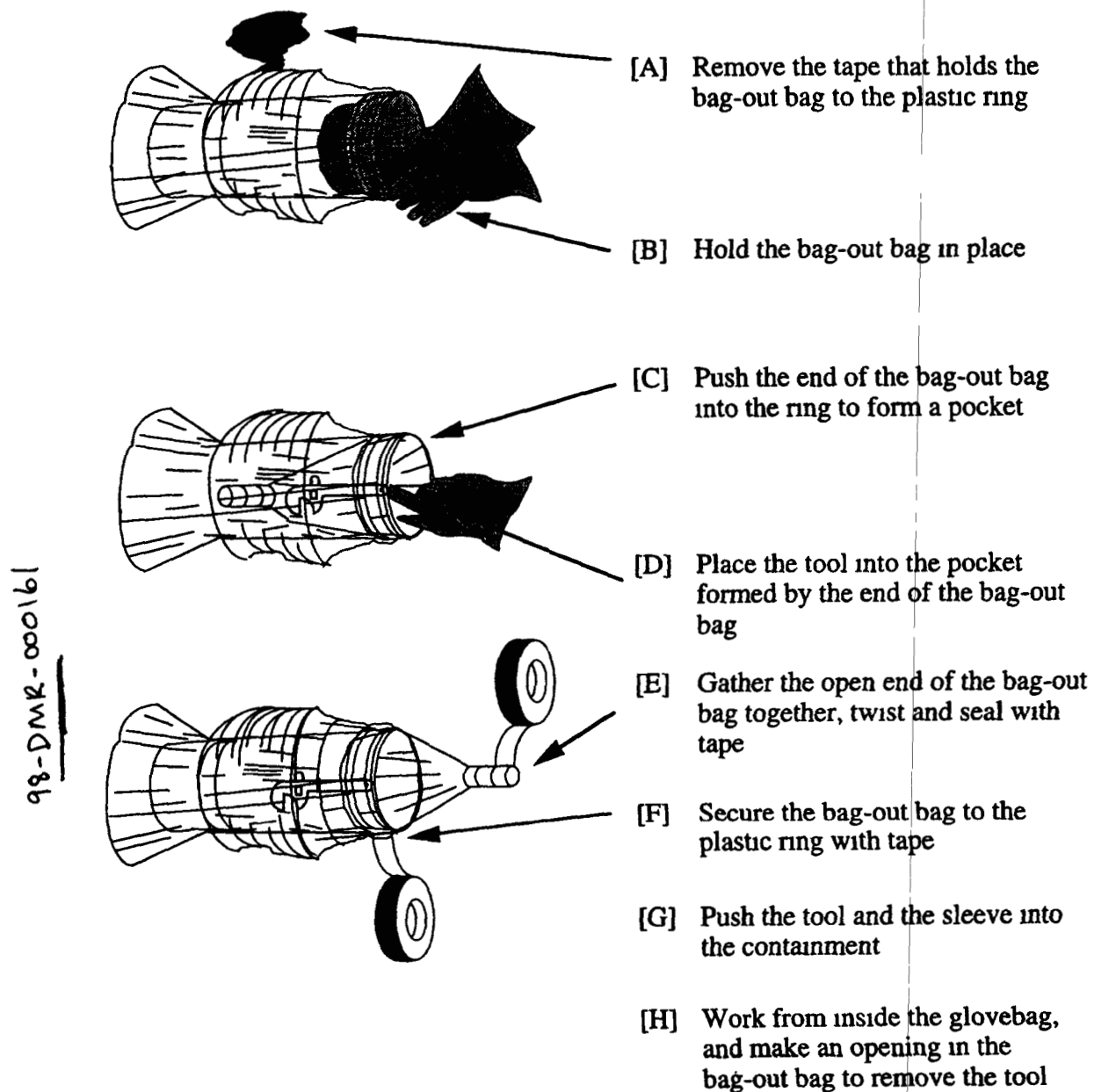
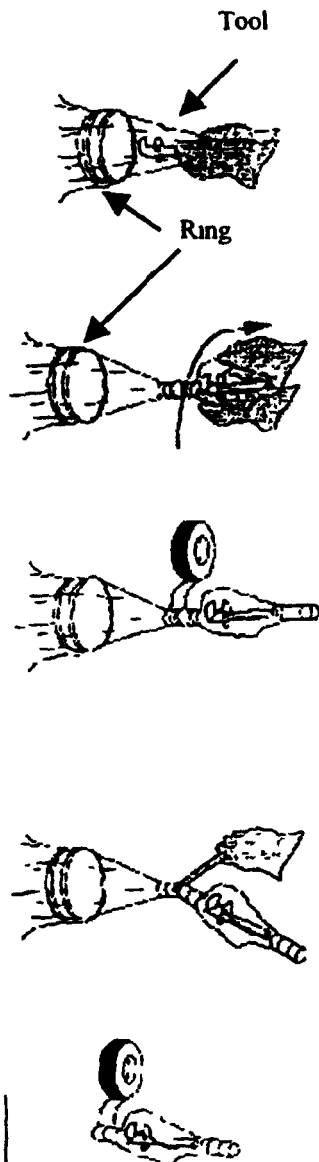


Figure 9, Tool Insertion

12.2 Bag-out and Bag-in Methods (continued)

- [2] IF tools or waste are to be removed from the glovebag,
THEN complete the steps illustrated in Figure 10, Tool Removal



- [A] Ensure that a downdraft machine is available, as required by the RWP.
- [B] Pass the tool through the ring and into the end of the bag-out bag
- [C] Twist the bag-out bag tightly between the tool and the ring.
- [D] Tightly tape over the twisted area of the bag-out bag.
- [E] Carefully cut through the center of the tape joint
- [F] Tape over the end of each tail to seal
- [G] Package and dispose of the waste in accordance with 4-D99-WO-1100, Solid Radioactive Waste Packaging Procedure

Figure 10, Tool Removal

12.3 Negative Ventilation for Glovebags

NOTE *When a pressure gauge is used to monitor glovebag negative, the gauge must be calibrated*

Negative ventilation in a glovebag serves several purposes. Use of ventilation provides air changes in the containment, which keeps the airborne concentration of radioactivity to a minimum and minimizes the accumulation of contamination on the inside of the containment. In the event that a pinhole or tear develops in the containment, the ventilation will prevent the contamination from being released from the containment. The vacuum source can also be used for decontamination efforts inside the containment, and when it comes time to remove the containment, the negative ventilation will be used for collapsing the containment while providing a means for contamination control.

Radiological Engineering

- [1] Recommend that negative ventilation be used, as appropriate
- [2] Minimize the use of ventilation when the ventilation is expected to draw contamination from a system into the glovebag

Glovebag Installer

- [3] IF negative ventilation is required by Radiological Engineering, as specified on Appendix 3, or on the RWP,
THEN
 - [A] Ensure that the required HEPA filter(s), as identified by Radiological Engineering, has been installed in accordance with Section 9.4, Installing the High Efficiency Particulate Air (HEPA) Filter, prior to use of negative ventilation
 - [B] Use a containment access sleeve to connect the vacuum hose to the glovebag

12.3 Negative Ventilation for Glovebags (continued)

- [C] Turn the vacuum source on, slowly adjusting the flow just until a slight negative pressure is obtained inside the glovebag

A slight negative pressure is indicated by a slight deflection in the containment. When the containment deflects excessively, then the negative pressure is too great.

- [D] Minimize use when the ventilation is expected to draw contamination from a system into a glovebag

13. INSTRUCTIONS—EMERGENCY SITUATIONS

Sections 13 1 through 13 5 of the procedure contain suggested or typical steps that may be performed differently and in a different sequence than as written

Potential emergency situations are the following

- Damaged gloves
- Cut hand while working in glovebag
- Unexpected solution in the glovebag
- Breach of containment

Figures 11, 12, and 13, Damaged Glove Removal and Replacement, contain instructions in the case of a damaged glove

Figure 14, Alternate Method for Damaged Glove Replacement, contains instructions for changing a damaged glove

Figure 15, Cut Hand, contains instructions in the case of a damaged glove and cut hand

13.1 Damaged Glove Removal and Replacement

Moist Wipe



Glovebag User

- [1] **IF** applicable,
THEN have a co-worker place a moist wipe just inside the armhole of the damaged glove to limit possible spread of contamination
- [2] Use the uncontaminated hand to grasp the damaged glove from inside the glovebag, and slowly pull the hand out of the damaged glove
- [3] Hold the contaminated hand just inside the armhole of the damaged glove
- [4] Work from outside of the glovebag to place a piece of tape over the cut in the glove, as necessary
- [5] Remove the contaminated surgical glove, and drop the surgical glove into the damaged glove
- [6] Have the RCT survey the hand for contamination
- [7] **IF** the hand is contaminated,
THEN follow the RCT instructions
- [8] **IF** the hand is **NOT** contaminated,
THEN put on another surgical glove

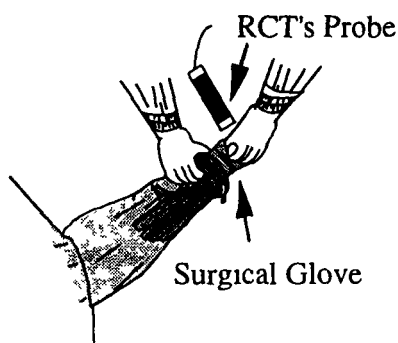
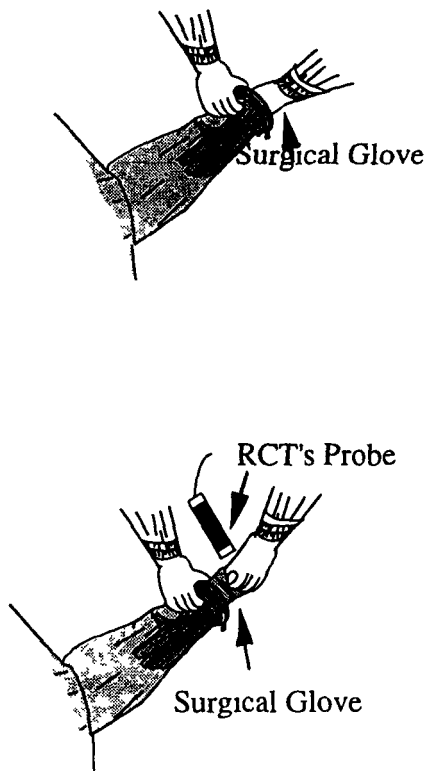
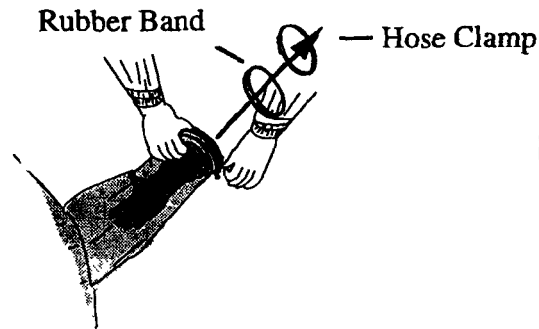
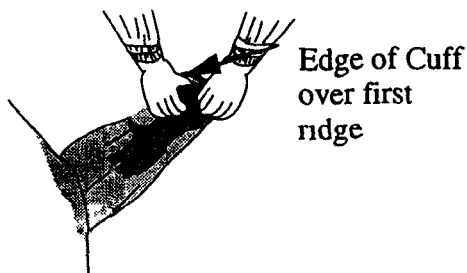


Figure 11, Damaged Glove Removal and Replacement (Part 1)

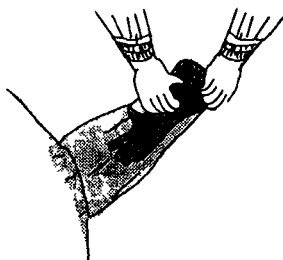
13.1 Damaged Glove Removal and Replacement (continued)



- [9] Remove the following from the glove sleeve in the order listed
- A Outer layer of tape
 - B Hose clamp
 - C Next layer of tape
 - D Rubber band



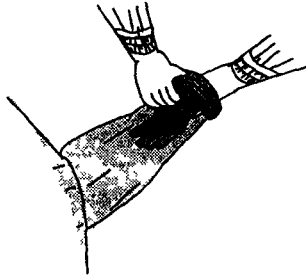
- [10] Bring the edge of the cuff of the damaged glove over the first ridge on the glove ring
- [11] Pull the glove slowly to the second ridge all the way around, being careful not to pull the glove off of the ring



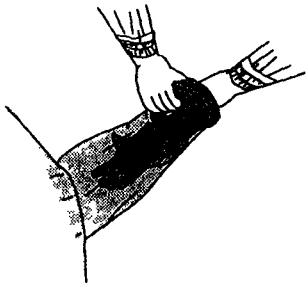
- [12] Place the new glove over the damaged glove and the glove ring, adjusting the new glove so that about 1/4 in of the cuff is evenly distributed past the ring
- [13] Install the rubber band on the ring over the new glove, ensuring that there are no folds or twists in the rubber band

Figure 12, Damaged Glove Removal and Replacement (Part 2)

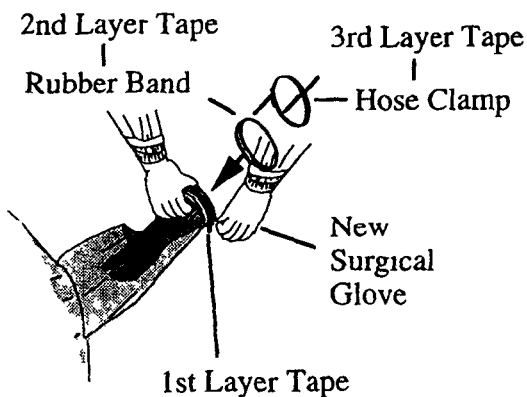
13.1 Damaged Glove Removal and Replacement (continued)



- [14] Reach into the new glove, and get a hold of the damaged glove
- [15] Try to get as close to the edge of the cuff as possible, and pull the damaged glove off of the glove ring at the top
- [16] Pull the damaged glove from the ring, being sure not to pull the new glove away from the glove ring



- [17] **WHEN** the glove comes loose from the glove ring, **THEN** drop the damaged glove into the glovebag

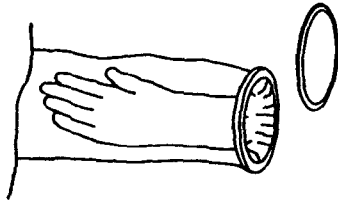


- [18] Tape over the rubber band with 1-in plastic tape, leaving a tab for easy removal
- [19] Install a metal hose clamp, and tape over the hose clamp to ensure no sharp edges are exposed on the clamp

Figure 13, Damaged Glove Removal and Replacement (Part 3)

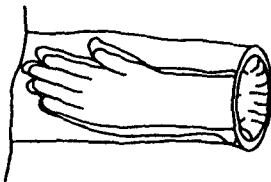
13.2 Alternate Method for Damaged Glove Replacement

Glovebag User

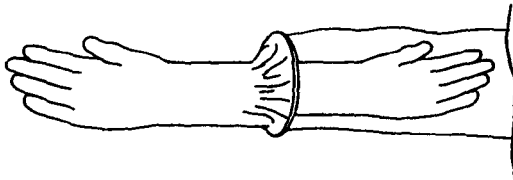


- [1] Remove the following from the glove sleeve in the order listed
 - A Outer layer of tape
 - B Hose clamp
 - C Next layer of tape
 - D Rubber band

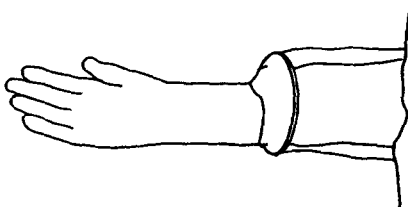
- [2] Ensure that the damaged glove is taped to the glove ring



- [3] Carefully place the new glove inside of the damaged glove, and fold the cuff of the new glove over the cuff of the damaged glove and the glove ring
- [4] Use tape to seal the cuff of the new glove onto the glove ring, tightly pulling the cuff into the groove of the glove ring
- [5] Install the following over the new glove, ensuring that there are no folds or twists and that any sharp edges are covered
 - A Rubber band
 - B Next layer of tape
 - C Hose clamp
 - D. Outer layer of tape



- [6] Reach inside of the new glove, and pull the new glove away from the damaged glove



- [7] Cut the old glove away from the sleeve, and push the new glove through

Figure 14, Alternate Method for Damaged Glove Replacement

13.3 Cut Hand in a Glovebag

98-DMR-000161

DCF-CHG-18 16-1-3

Glovebag User

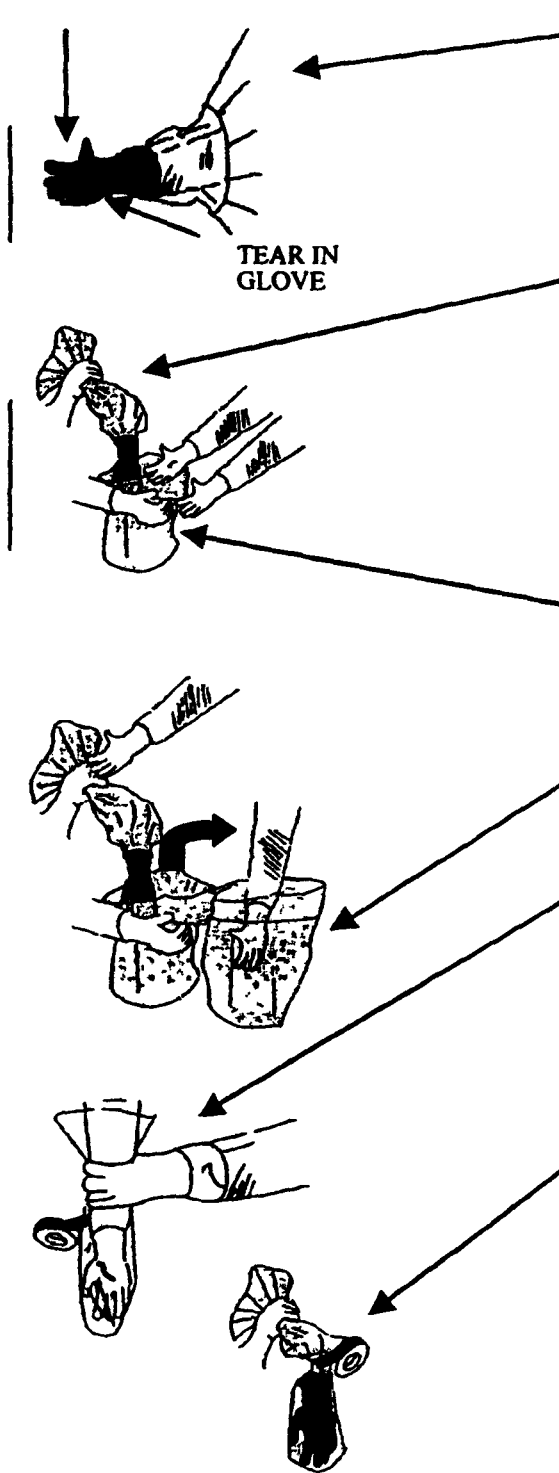
- 
- [1] Try to remain calm, and lower hand to prevent release of contaminated fluid through the damaged glove
 - [2] Obtain assistance from a second person, and notify Radiological Safety
 - [3] Hold the sleeve of the damaged glove in place to allow the injured hand to be withdrawn, and to prevent contamination from escaping
 - [4] ~~Ensure that poly bags are in compliance with applicable Nuclear Material Safety Limits (NMSLs), and Criticality Safety Operating Limits (CSOLs).~~
 - [5] Hold an open poly bag directly under the damaged glove and injured hand from the damaged glove to the poly bag
 - [6] Hold a second open poly bag next to the first bag, and transfer the injured hand to the second poly bag
 - [7] Bring the second poly bag up over the injured hand, and tape the poly bag to the coverall sleeve
 - [8] Have an RCT survey the bag surrounding the injured hand, and go to Occupational Health for medical attention.
 - [9] Bring the poly bag up over the damaged glove, and seal with plastic tape
 - [10] Decontaminate the area, and replace the damaged glove in accordance with instructions from
 - RCT
 - Radiological Engineering
 - Supervision

Figure 15, Cut Hand

13.4 Unexpected Liquid in Glovebag

Glovebag User

- [1] Remain calm, and evaluate the situation to determine the appropriate actions to follow

- [2] Warn other personnel in the area and the RCT

- [3] Attempt to contain the leak, such as by re-tightening the flange, as appropriate

- [4] **IF** the leak continues or is too excessive to control,
 THEN
 - [A] **IF** required by the CSOL/NMSL or the work package,
 THEN cut the containment to prevent liquid buildup

 - [B] Exit the area, and notify supervision or the Shift Manager

13.5 Breach of Containment

Glovebag User

- [1] Stop any operations in the glovebag

- [2] Remain calm, and evaluate the situation to determine the appropriate actions to follow

- [3] Warn other personnel in the area and the RCT

- [4] **IF** contamination release is suspected,
 OR the breach is too large to be repaired quickly and safely,
 THEN exit the area, and wait for direction from supervision and Radiological Safety

98-DMR-000161

13.5 Breach of Containment (continued)

- [5] **IF** the breach is small and confinable,
THEN isolate the breach area through the use of tape, bags, or other means

- [6] **WHEN** glovebag operations are to be resumed,
THEN request that the RCT recertify the glovebag for use

14. INSTRUCTIONS—CONTAINMENT REMOVAL

This section contains suggested or typical steps that may be performed differently and in a different sequence than as written

Glovebag User

- [1] Remove all liquids from the containment, using a drain or disposable wipes, as appropriate
- [2] Carefully remove all items that are not required for containment removal from the containment through the bag-out sleeve
- [3] Disconnect and remove all service leads
- [4] Use caution in removing the containment to prevent the release of any contamination
- [5] Decontaminate the glovebag interior and enclosed components to the greatest extent reasonably achievable

RCT Supervisor

- [6] Determine survey requirements prior to removing bag

RCT

- [7] Conduct a survey of the glovebag interior prior to its removal, as applicable

RCT Supervisor

- [8] **WHEN** the results of the survey are received,
THEN
 - [A] Determine if further decontamination is necessary
 - [B] Use a fixative or a strippable coating, such as TLC Strip Coat, as necessary
 - [C] Determine appropriate personal protective clothing for glovebag removal, and ensure that the RWP reflects this information

14. **INSTRUCTIONS—CONTAINMENT REMOVAL (continued)**

NOTE *Steps [9][A] through [9][E] can be performed simultaneously or in any order*

Glovebag User

[9] **IF** a downdraft unit is used,
THEN perform the following:

[A] Remove the glovebag HEPA filter(s) using the bag-cut method, similar to the method shown in Figure 10, Containment Installation

[a] **IF** 2 cfm HEPA filter(s) were used,
THEN it is acceptable to seal the filter with tape and leave it (them) in place

[B] Ensure that an approved ventilation unit (air mover) is connected to a convenient glovebag sleeve

[C] Allow the air mover to collapse the containment, cutting the glovebag supports, as needed, to allow collapse

[D] Place the glovebag into a large polybag as the glovebag collapses

[E] **WHEN** the glovebag and polybag are fully collapsed,
THEN cut all remaining glovebag attachments and supports

[F] Separate the downdraft hose from the polybag, and seal the top of the polybag with plastic tape

[10] **IF** a downdraft unit is **NOT** used,
THEN perform the following

[A] Apply a fixative or wipe down the inside of the bag

[B] Place large polybag beneath the glovebag.

[C] Slowly cut bag off the system, allowing the RCT to survey along the cut

[D] Place bag into a large polybag and tape shut

14. INSTRUCTIONS—CONTAINMENT REMOVAL (continued)

DCF-CHG-18 16-1-3

98-DMR-000161

- [11] Dispose of waste in accordance with the following, as applicable
- 4-D99-WO-1100, Solid Radioactive Waste Packaging Procedure
 - 1-M12-WO-4034, Solid Radioactive Waste Packaging Requirements Manual

RCT

- [12] Conduct a post-job radiological survey
- [13] Document survey completion and results on the RWP

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15. RECORDS

Appendices 2 and 3 are Quality Assurance records generated by this procedure

DCF-CHG-18 16-1-3

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Radiological Safety

[1] Attach Appendix 2 and 3 to the RWP

[2] Process the RWP in accordance with 3-PRO-229-RSP-01 01, Radiological Work Permits, and Appendix 1, Records Processing Guide

Job Supervisor

[3] Ensure that Criticality Safety Evaluation requirements are included with the IWCP Work Package for record retention.

16. REFERENCES

DCF-2

DCF-CHG-8 16-1-3

SPEC-13090-0855, Radiation Protection (Glovebags)

MAN-102-SRCM, Rocky Flats Environmental Technology Site Radiological Control Manual (Site RCM)

1-M12-WO-4034, Solid Radioactive Waste Packaging Requirements Manual

3-PRO-229-RSP-01.01, Radiological Work Permits

1-V41-RM-001, Records Management Manual

1-V51-COEM-DES-210, Site Engineering Process Procedure

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4-D99-WO-1100, Solid Radioactive Waste Packaging Procedure

3-PRO-165-RSP-07 02, Contamination Monitoring Requirements

DCF-CHG-8 16-1-3

10 CFR 835, Occupational Radiation Protection

APPENDIX 1

Page 1 of 1

RECORDS PROCESSING GUIDE

Record Identification	Record Type Determination	Protection/Storage Methods	Processing Instructions
Appendix 2, Pre-Installation Inspection Checklist Appendix 3, Post-Installation Inspection Checklist Other supporting documents ¹	In Process QA Record	While being generated, the Responsible Manager (RM) implements a reasonable level of protection to prevent loss and/or degradation. Document(s) are processed using standard office filing equipment and methods when not in use.	Continue prescribed processing document(s) Upon completion of processing, approval, and authentication, document(s) become part of the Project files. These documents are handled and controlled as QA Records.
Completed Forms and documents as identified above	QA Record	RM implements a reasonable level of protection to prevent loss and/or degradation. Document(s) are processed using standard office filing equipment.	When inactive (as defined in 1-V41-RM-001, Records Management Manual), transfer to Site Records Management in accordance with 1-V41-RM-001.

¹ Supporting documents such as RWPs and work packages are handled and processed in accordance with site documents.

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APPENDIX 2

Page 1 of 1

PRE-INSTALLATION INSPECTION CHECKLIST

WORK CONTROL/PROCEDURE NUMBER _____ RWP NUMBER _____
COGNIZANT RAD ENG/EMP # _____ DATE _____

(Initial as appropriate)

REQD	ACCEPT	REJECT	
			VISUAL INTEGRITY INSPECTION
			Glovebag seams are intact
			No pinholes or tears are in the glovebag
			No pinholes are in the glovebag sleeves or bag-out bag
			Access zipper diaphragm is intact
			Tie-off loops are present, and in good condition
			GLOVES
			No pinholes, tears, or thin spots (Pre-work Certificate only)
			Gloves are installed properly (Pre-work Certificate only)
			No glove deterioration (such as cuts, pinholes, or abrasions)
			Room side of gloves is free of contamination
			LEAK TESTS
			Pre-installation pressure test passed
			Pre-installation water test passed
			ADDITIONAL REQUIREMENTS
			COMMENTS

SUBMITTED _____
Glovebag Installer Signature Employee No Date

APPENDIX 3

Page 1 of 2

POST-INSTALLATION INSPECTION CHECKLIST

WORK CONTROL/PROCEDURE NUMBER _____ RWP NUMBER _____
COGNIZANT RAD ENG/EMP # _____ DATE _____

(Initial as appropriate)

REQD	ACCEPT	REJECT	
			VISUAL INTEGRITY INSPECTION
			Glovebag seams are intact
			No pinholes or tears are in the glovebag
			No pinholes are in the glovebag sleeves or bag-out bag
			Tie-off loops are present, and in good condition
			Glovebag is sealed to equipment properly
			LEAK TESTS
			Post-installation pressure test passed
			Post-installation water test passed
			ACCESSORIES
			HEPA filter(s) are DOP-tested
			HEPA filter(s) are properly installed
			Bag-out cylinder and bag are properly installed
			Drains are properly installed
			Other _____
			DRAPE
			The drape is in compliance with the building NMSLs or CSOLs
			The drape will adequately control the unexpected release of tools, materials, or contamination from the glovebag
			The drape does <u>not</u> interfere with the safe use of the glovebag
			GLOVEBAG SUPPORTS
			Glovebag is properly positioned and supported for work
			No undue stress is present at any support point
			Accessories and service leads are properly supported

07/30/96

Page 1 of 1

[illegible]

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Rocky Flats Environmental Technology Site

PRO-W89-HSP-31.11

REVISION 3

TRANSFER AND STORAGE OF PLUTONIUM FOR FIRE SAFETY

Responsible Organization Fire Protection Engineering Effective Date 2/16/01

APPROVED BY Fire Protection Program Manager / 12/14/00

Title Date

Bruce Campbell

Print Name

[Signature]
Approval Signature

N/A
Print Name of Responsible Manager (N/A if Review Approval Authority)

The Responsible Manager Has Determined The Following Organization's Review Is Required. Review Documentation Is Contained In The Document History File:

Fire Protection Engineering

707-Closure Project

371/374-Closure Project

771-Closure Project

776/777-Closure Project

Engineering, Environmental, Safety, and Quality Programs

Material Stewardship

Remediation, Industrial Building D&D, and Site Services Project

Strategic Planning and Integration

Traffic Management

IMPORTANT NOTES

Periodic Review Frequency: 4 years from the Effective Date
This procedure supersedes PRO-W89-HSP-31.11, Revision 2
SES/USDQ Review USQD-RFP-01 0247-SMS
ISR Review: SISRC 01-04 (12/13/00)

Reviewed for Classification/UCNI

By Lorna L. Dunn U/UC

Date 12-18-00

64
PADC-1999-02451

① DCF Originator Brigid M. Moore 7/22/02
 Print Sign Date

Organization 707/776/777 Procedures

Phone/Pager/Location 3185 / 212-5351 / Bldg 750

② (Authorizes processing of request)

Responsible Bruce Campbell 1/1 7/30/02
 Manager Print Sign Date

Organization Fire Protection Engineering

Phone/Pager/Location X7642 / 212-6384 / 130

③ Assigned SME Bruce Campbell
 Print Name

Organization Fire Protection Engineering

Phone/Pager/Location X7642 / 212-6384 / 130

④ Transfer and Storage of Plutonium for Fire Safety
 Document Title

PRO-W89-HSP-31 11, Rev 3
 Existing Document Number and Revision

N/A

New Document Number and Revision (if Applicable)

⑤ Type of Document

<input type="checkbox"/> Policy	<input checked="" type="checkbox"/> Procedure (indicate type)	<input type="checkbox"/> Instruction
<input type="checkbox"/> Mgt Directive	<input type="checkbox"/> Technical <input type="checkbox"/> Alarm	<input type="checkbox"/> Job Aid
<input type="checkbox"/> Manual	<input checked="" type="checkbox"/> Administrative <input type="checkbox"/> Other	<input type="checkbox"/> Other

If "Other" is checked please specify type _____

⑥ Type of Modification

<input type="checkbox"/> New	<input checked="" type="checkbox"/> Change
<input type="checkbox"/> One Time Use Only	<input type="checkbox"/> Minor
<input type="checkbox"/> Revision	<input checked="" type="checkbox"/> Major
	<input type="checkbox"/> Cancellation

Proposed Modification

Update the LOEP
 Add exemptions, Page 6
 Modify the IN-Line definition
 Modify Table 7-1 Table 7-III, 8-III 9-I, 9-III 10-III
 Editorial as required

Justification

In accordance with SDRM
 PER PRO-1563-SLUDGE-707
 Clarification
 PER PRO-1563-SLUDGE-707, adding IDC-064, and updating for current requirements

External (Technical) Review

⑩	⑪	⑫	⑩	⑪	⑫
Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
Subject-Matter Expert	<u>Bruce Campbell</u>	<u>7/30/02</u>	Material Stewardship	<u>Dev Grant</u>	<u>8/5/02</u>
707/776/777 Closure Proj	<u>Debbie Brown</u>	<u>8/1/02</u>	RISS	<u>P.V. Thomas</u>	<u>8/5/02</u>
371/374 Closure Proj	<u>Debbie Gonzalez</u>	<u>8/2/02</u>	SP&I	<u>Dev. Brown</u>	<u>7/26/02</u>
771 Closure Proj	<u>Cal Morgan</u>	<u>7/24/02</u>	ES&S	<u>Mark Hester</u>	<u>7/29/02</u>
ES&QP	<u>G DeVner</u>	<u>7/30/02</u>		<u>Linda VanDeVere</u>	

⑬ Special Reviews (NOTE Other Special Reviews may be required. See PRO-815-DM-01 for more information.)

ISR (Number or Not Required) SISRC-02-09
SES-RFP-02-2234-MAW
 TI Alignment (signature or N/A) N/A
 Sign Date

Reviewed for Classification
 (If Required N/A if not)
 By N/A
 Date _____

⑭ Approval (Completed to approve changes and cancellations only. New documents and revisions are approved by signature on the document cover page.)

Approval Authority 1/1 B. G. Campbell 7/30/02 Effective Date 8/12/02
 Print Name Sign Date

DCF Originator Bill VandenBoogaard
Print Sign Date 5/5/02

Organization Fire Protection Engineering

Phone/Pager/Location 4136/B130

Responsible Manager Bruce Campbell
Print Sign Date 5/6/02

Organization Fire Protection Engineering

Phone/Pager/Location 7642/212-6384/B130

Assigned SME Dave Tomecek
Print Sign Date 05/06/02

Organization Fire Protection Engineering

Phone/Pager/Location 2585/B130

Transfer and Storage of Plutonium for Fire Safety
Document TitlePRO-W89-HSP-31 11 Rev 3
Existing Document Number and RevisionN/A
New Document Number and Revision (if applicable)

Type of Document

- ☐ Policy ☒ Procedure (indicate type) ☐ Instruction
☐ Mgt Directive ☐ Technical ☐ Alarm ☐ Job Aid
☐ Manual ☒ Admin ☐ Other ☐ Other

If "Other" is checked, please specify type

Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Minor
☐ Revision ☒ Major
☐ Cancellation

Proposed Modification

Page 2, Update the LOEP
Page 69 add IDC s 532A 532B, 532C, and 532D

Justification

- 1) Update
2) The new IDC s support operations in B-371

External (Technical) Review

Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
Resp Mgr	B. Campbell	5/6/02	Material Stewardship	/s/	4/22/02
FPE-SME	D. Tomecek	5/5/02	RISS	/s/	4/10/02
371/374 Closure Project	/s/	5/2/02	SP&I	/s/	4/10/02
707/776/777 Closure Project	/s/	4/19/02	ES&S	/s/	4/19/02
771 Closure Project	/s/	4/9/02			
ES&QP	/s/	4/17/02			

Special Reviews (NOTE Other Special Reviews may be required See PRO-815-DM-01 for more information)

ISR (Number or "Not Required") SISRC 02-08 (6-7-02)

TI Alignment (signature or N/A):
Sign N/A DateReviewed for Classification
(If Required "N/A" if not)By N/A
Date

Approval (Completed to approve changes and cancellations only New documents and revisions are approved by signature on the document cover page)

Approval Authority B. Campbell B. Campbell
Print Name Sign Date 5/6/02 Effective Date 6-18-02

DCF Originator Bill VandenBoogaard
Print Sign Date 12/3/01Organization Fire Protection EngineeringPhone/Pager/Location 4136/B130Responsible Manager Bruce Campbell
Print Sign Date 12/3/01Organization Fire Protection EngineeringPhone/Pager/Location 7642/212-6384/B130

Assigned SME Bruce Campbell

Organization Fire Protection EngineeringPhone/Pager/Location 7642/212-6384/B130Transfer and Storage of Plutonium for Fire Safety
Document TitlePRO-W89-HSP-31 11 Rev 3
Existing Document Number and RevisionN/A
New Document Number and Revision (if applicable)

Type of Document

- ☐ Policy ☒ Procedure (indicate type) ☐ Instruction
☐ Mgt Directive ☐ Technical ☐ Alarm ☐ Job Aid
☐ Manual ☒ Admin ☐ Other ☐ Other

If "Other" is checked, please specify type NA

Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Minor
☐ Revision ☒ Major
☐ Cancellation

Proposed Modification

Page 2, update the LOEP
Page 6, change the 3rd paragraph

Page 45, change sentence 3 Under Graphite Molds and Mold Pieces

Justification

Express the LLW and TRU waste exemption gram value in mass values verified by the Waste Management Facilities Clarify the application of this exemption to Standard Waste Boxes
Correction

External (Technical) Review

Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
Resp Mgr	<i>[Signature]</i>	12/3/01			
Crit Engineering	<i>[Signature]</i>	12/3/01			
FPE-SME	<i>[Signature]</i>	12/3/01			
Nuc. Safety	<i>[Signature]</i>	11/5/02			

Special Reviews (NOTE Other Special Reviews may be required See PRO-815-DM-01 for more information)

ISR (Number or "Not Required") S/SEC 02-03 (1-11-02)

TI Alignment (signature or N/A)

Sign

N/A

Date

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By

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Date

Approval (Completed to approve changes and cancellations only New documents and revisions are approved by signature on the document cover page.)

Approval Authority

Print Name

Sign

Date

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OF Originator Bill VandenBoogaard *[Signature]* 8/20/01
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Responsible Manager Bruce Campbell *[Signature]* 8/20/01
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Transfer and Storage of Plutonium for Fire Safety
 Document Title

PRO-W89-HSP-3111 Rev 3

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Type of Document

- ☐ Policy ☒ Procedure (indicate type) ☐ Instruction
☐ Mgt Directive ☐ Technical ☐ Alarm ☐ Job Aid
☐ Manual ☒ Admin ☐ Other ☐ Other

If "Other" is checked, please specify type

Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Minor
☐ Revision ☒ Major
☐ Cancellation

Proposed Modification

Justification

Page 2, update the LOEP and TOC
 Page 6, add a statement to the SCOPE
 Page 15, Section 5.2, change
 Page 16, Section 5.4 and Section 5.5, change
 Page 23, delete IDC H61 and 070 Change IDC 086 and add IDC 154
 Page 24, change IDC 193, 197, 200 and 360
 Page 29, change the IDC list
 Page 31, change the IDC list
 Page 32, change the IDC list
 Page 36, change the IDC list
 Page 38, change the IDC list
 Page 40, change the IDC list
 Page 41, change the IDC list
 Page 45, change the IDC list
 Page 48, change the IDC list and change Step A. 3 & 4
 Page 51, change the IDC list
 Page 52, change the IDC list
 Page 55, change the IDC list
 Page 62 thru 71, add and delete IDCs and reference to Attractiveness Levels

Updating the procedure to agree with the Site Material Control and Accountability master IDC list.

External (Technical) Review

Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
Resp Mgr	<i>[Signature]</i>	8-20-01	SE&QP	<i>[Signature]</i>	9-4-01
RISS	<i>[Signature]</i>	9-5-01	SP&I	<i>[Signature]</i>	8-30-01
Material Stewardship	<i>[Signature]</i>	9-29-01	Traffic Management	<i>[Signature]</i>	8-21-01
371/374 Closure Project	<i>[Signature]</i>	9-5-01	FPE	<i>[Signature]</i>	9-19-01
707/716/777 Closure Project	<i>[Signature]</i>	8-22-01			
771 Closure Project	<i>[Signature]</i>	9-19-01			

Special Reviews: (NOTE Other Special Reviews may be required See PRO-815-DM-01 for more information)

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37	2/16/01	69	6/18/02
38	08/12/02	70-71	10/31/01

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The following DCFs are active for this procedure

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1. PURPOSE

This procedure defines the responsibilities and requirements for the movement and transfer, storage, and packaging of plutonium (Pu), Pu compounds, Pu solutions, and certain residues to minimize the possibility of fires involving Pu until the long-term transfer and storage requirements have been met, and material is transferred to a new containment system at the Rocky Flats Environmental Technology Site (Site) For material scheduled to be processed through the Plutonium Stabilization and Packaging System (PuSPS), the containment system will be the 3013 container For materials not scheduled for PuSPS, the containment system will be the Pipe Overpack Component

2. SCOPE

Facilities that handle, move, store, or transfer plutonium in accordance with this procedure must have documented evidence of compliance to the requirements contained in this document The evidence of compliance can be in the form of an implementation plan, a memorandum of understanding, a plan of action approved by the Fire Protection Program Manager, Shift Manager/CCA Logbook entries, or Compensatory Measures Determination Forms

The requirements of this procedure apply to materials with certain Item Description Codes (IDCs) as well as to analytical samples The IDC matrix shown in Table 7-1, Movement and Transfer, Storage, and Packaging Requirements Matrix, lists the IDCs in numerical order, with references to the requirements (by material type) for movement and transfer, storage, and packaging.

A formal Technical Basis, in addition to this procedure, is on file with Engineering Document Control

For the purposes of this procedure, the word **SHALL** denotes that something is required The word **SHOULD** denotes that something is recommended

2. **SCOPE (continued)**

Various exemptions to specific requirements exist throughout this document. The exemptions are specified in the Scope, the Requirements section, and in Sections 8, 9, and 10 of this document.

Pu metal and oxide, once packaged according to DOE-STD-3013-2000 are exempt from the requirements of this document as long as surveillance is conducted according to the DOE Standard. It should be noted that DOE-STD-3013-2000 applies to materials with $\text{Pu} + \text{U} \geq 30 \text{ wt } \%$. The requirements in this document, however, are not based on the 3013 standard, but upon the reactivity of Pu and the amount of heat that might potentially be generated.

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If previously identified pyrophoric material is determined to be non-pyrophoric, based on analytical data, the material is exempt from this procedure. Down-blended (with silica sand or magnesium oxide) material is exempt from this procedure if mixed in accordance with FPE procedures (PRO-1563-SLUDGE-707, Packaging of Potentially Pyrophoric Sludges and Waste Debris). This procedure does not apply to low-level and transuranic (TRU) waste with less than 220 grams Pu + U or 200 grams fissile gram equivalent (FGE) for drums and 342 grams Pu + U or 325 grams FGE for waste boxes.

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Pu metal in Building 371 that is not compliant with HSP 31 11 is permitted to be processed as follows: material overdue for brushing can be prepared for packaging in the inert Material Preparation Glovebox to establish compliance with DOE-STD-3013 requirements. Deferral of required brushing, however, requires an exemption by Fire Protection Programs.

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This revision supersedes PRO-W89-HSP-31 11, Revision 2.

3 **OVERVIEW**

Table 7-1, Movement and Transfer, Storage, and Packaging Requirements Matrix, a listing of IDCs applicable to this procedure, will be referenced by the user of this procedure to determine the correct packaging requirements, the movement and transfer requirements, and the storage requirements applicable to the IDC. For the movement and transfer requirements of the IDC, the user would go to Section 8, Movement and Transfer Requirements, and select the appropriate table. For the storage requirements the user would go to Section 9, Storage Requirements, and select the appropriate table. For the packaging requirements the user would go to Section 10, Packaging Requirements, and select the appropriate table.

3. OVERVIEW (continued)

Appendix 1, IDC List, provides a complete listing of IDCs known to exist on the Site. The user of this procedure should reference Appendix 1 if an IDC is not listed in Table 7-1 to verify the status of the IDC. Appendix 1 provides the following

- IDCs which are subject to the requirements of this procedure
- IDCs which are exempt from this procedure
- IDCs which are presently inactive

This procedure also provides the instructions necessary to address deviations from this procedure, remedial actions, and out-of-compliance conditions

4. DEFINITIONS AND ACRONYMS

4.1 Definitions

Alloyed Plutonium Pu metal alloyed with other metals. Delta, Tailwind, and Trunk are specific alloys of plutonium.

Alpha Plutonium Alpha plutonium is unalloyed metal.

Analytical Samples and Standards. Material for analysis or a standard used to verify analysis. Analytical samples includes material being sent for analysis, and material already analyzed which can be stored for 2 months following completion of analysis. This includes mounted metallographic samples and materials used for research and development testing.

Approved Onsite Packaging (or Transfer Package) Packages are to meet the requirements of MAN-T91-STSM-001, Site Transportation Safety Manual and the Site Safety Analysis Report (SAR).

Approved Storage Area A storage location for Pu that is approved by Facility Management.

4.1 Definitions (continued)

Baseline Weight The as-packaged weight of an item, including the metal packaging(s), plastic bag(s), and tape, used as a reference against which subsequent weights are compared in order to determine weight gain

Between Process Areas Areas external to Process Areas

Button. Pu metal pieces greater than 50g that are produced by reduction, electrorefining, direct oxide reduction, or molten salt operations

Calcination Also called thermal stabilization

Combustible Material. Any material, solid, liquid, or gas that can oxidize rapidly, producing heat, and often light This includes materials such as tissues, paper, rags, wood, oils, and flammable liquids

Duplex Materials Two materials in contact such as plutonium in contact with massive metal pieces such as tantalum or stainless steel, or, plutonium in contact with graphite molds or mold pieces

Feed Ingot Metal pieces produced by casting Pu into a flat or finger shape (same as ingot) Used for making up final charge for casting

Heat Detector A UL listed device for detecting temperature changes in a glovebox or for a storage container Generally connected to an alarmed system via a fire alarm panel

Holdup Material (Duct or Glovebox) Material removed from the cleanup of ductwork and gloveboxes in various buildings This material has not been thermally stabilized, and usually contains organic materials After stabilization this material should be reclassified as stable oxide

Inert Atmosphere. An atmosphere containing argon, helium, or nitrogen, with less than 5% oxygen

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4.1 Definitions (continued)

Ingot Produced by casting Pu metal into a flat or finger (feed ingot) shape Pieces of ingots greater than 50g are considered to be an ingot

In-Line Material that is within a glovebox system, conveyor line, or in-line storage vault protected with operable glovebox heat detection (except the Stacker/Retriever) In-line storage is also known as Zone I storage

In-Process Pu material in the process of being analyzed, Pu being brushed for inventory and PRO-W89-HSP-31 11 compliance, Pu residues being thermally stabilized and repackaged, material being tested for gas generation, and size reduction

Item Description Code (IDC) A Rocky Flats system for maintaining accountability. A number code and description is given to various types of plutonium-bearing material Each IDC describes a different material with a different and distinct origin and/or makeup

Machine Turnings Small chips, turnings, or fines

Metallographic Samples Material generated and used for metallographic evaluation (mounted or unmounted) These are identified by IDCs 210, 212, and 213.

Miscellaneous Plutonium Includes Pu metal pieces of less than 50g each, combustible Pu fines, reactive Pu compounds (hydrides and nitrides), mounted and unmounted metallographic samples These are identified by IDCs 151, 210, 212, 213, and 333

Movement. Refers to change of location of material within a building

Net Weight The total weight of the material within a container/package, including the plutonium weight, but not including the container/package

Nuclear Safety Organizations The responsible Project Nuclear Safety organization or for Site issues the Kaiser-Hill Nuclear Safety organization

4.1 Definitions (continued)

Offsite. Any area beyond access-controlled Department of Energy (DOE) property to which the public has free and unlimited access

Operations Order A document that communicates instructions or directions from the Facility Manager to operations, support, and other personnel. Operations Orders may contain instructions and direction of a technical and/or administrative nature. Operations Orders can be either administrative, technical, or interim.

Outside Line Material that is not within a glovebox, conveyor, or inert vault system. Outside line is also known as Zone II or IA storage, or out-of-line storage.

Parts and Subassemblies Nuclear components produced by fabrication methods that include cast shapes, pressings, machine finished, unfinished, and disassembly parts. Pieces of parts and subassemblies greater than 50g are considered to be parts and subassemblies.

Plutonium Parts and Large Pieces Includes Pu metals in the form of buttons, ingots, parts and subassemblies greater than 50g.

Process Area An area or facility used for the processing and/or storing of Pu.

Process Operating Procedure Written documentation which

- Prescribes or describes work, and/or a documented set of steps or actions that systematically specifies or describes how an activity is to be performed, and
- Contains management controls (responsibility assignment and specific instructions) for the accomplishment of administrative, operations, or support processes and tasks.

Pu Heat Sink A metal device (noncorrosive) used to absorb heat from the rapid oxidation of Pu. The use of a heat sink allows increased quantities of nonthermally stabilized Pu to be safely stored.

4.1 Definitions (continued)

Pu Residues By-products of various operations, including glovebox cleanup, with enough Pu content to have once been considered economically recoverable Includes oily or unburned oxide, skull material, machine tool sludges, and analytical and R & D residues Similar to Solid Residues

Pyrochemical Salt Residues Residues generated as by-products of Molten Salt Extraction, Electrowinning, Direct Oxide Reduction, and pyrochemical R & D processes These IDCs may contain reactive metals Some salts are hygroscopic so water may be present in some IDCs These are identified by IDCs 360, 365, 392, 409, 411, 413, 414, 427, 434, 435, 454, 601, and 654

Pyrophoric Plutonium Metal or Pu compounds (including oxides) in a form that will ignite spontaneously in air at a temperature of 150 °C or below in the absence of external heat, shock, or friction

Reactive Compounds Compounds that are chemically unstable and which may react with air to produce heat May also be pyrophoric Includes, but is not limited to, plutonium hydride, plutonium nitride, and unstabilized plutonium suboxide

Reburned Oxide (thermally stabilized) A Pu oxide [plutonium dioxide (PuO_2)] formed from a metal or from a pyrophoric compound that has been thermally stabilized

Safety Analysis Report (SAR) A formal report that documents the adequacy of safety analysis to ensure that a facility can be constructed, operated, maintained, shut down and decommissioned safely and in compliance with applicable laws and regulations

Sand, Slag and Crucible A Pu residue from the Pu foundry or recovery process If the Pu content is less than or equal to 50 wt % Pu, the material is exempted from the requirements of this procedure The only IDC remaining in this category is 392 Process knowledge exempts IDCs 387 and 398 No containers/packages exist with greater than 50 wt % Pu for IDCs 390, 391, 393, 394, 395, and 396

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4.1 Definitions (continued)

Scrub Alloy Alloy generated by chemically scrubbing Pu out of molten extraction salts. If the Pu content is less than or equal to 50%, the material is exempted from the requirements of this procedure. If the Pu content is greater than 50%, the material is subject to the requirements of this procedure. These are identified by IDCs 025, 416, 600, 602, 603, 604, and 620.

Sealed Container Container or package that is closed by an engineered tight seal such as an elastomer O-ring, a crimp seal, or a metal to metal seal. Taping is not acceptable to create an adequate seal.

Sludges Provided from mixed residues that may contain free liquids, potentially unstable compounds produced by the reaction of nitric acid on various organic materials, and other pyrophoric materials.

Solid residues By-products of past Pu production and recovery operations, with enough Pu content to have once been considered economically recoverable. This includes metal, glass, graphite crucibles, salts, combustibles, filters, gloves, ion exchange resins, incinerator ash, and sludges. The Pu content varies from 1 wt % Pu to 80 wt % Pu.

Stabilize Render non-reactive. One method is heating at an elevated temperature to oxidize the material. (See thermal stabilization, calcination)

Stable Oxide (or Process Oxide) A PuO_2 formed from a nonpyrophoric source or by calcination. Examples of nonpyrophoric sources are Pu peroxide, Pu oxalate, and Pu nitrate. Stable oxide or process oxide is nonpyrophoric.

Standards References of known composition used to verify analyses.

Storage The placing and keeping of nuclear material in a secured repository such as a vault, vault-type room, the 707 X-Y Retriever, or 371 Stacker/Retriever.

4.1 Definitions (continued)

Technical Safety Requirements (TSRs) Those requirements which define the conditions, the safe boundaries, and the management or administrative controls necessary to ensure the safe operation of a nuclear facility and to reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive materials or from radiation exposures due to inadvertent criticality

Thermal Stabilization The process of calcination in which the material is heated in an oxygen containing (air) environment to oxidize and stabilize the Pu-bearing species, and/or other reactive materials, in order to render the material nonpyrophoric
Stabilization requires heating

- A minimum of two times at 500 °C, or
- Once at 800 °C or higher and held at this temperature for a minimum of 60 minutes, as long as the depth of the oxide does not exceed 0.75 inches

Tight-Fitting Lid. A lid that, when placed on the container, remains securely in place as the container is handled during normal operations, such as a Vollrath can (taped), paint can, or a screw top lid

Transfer. Transfer, for the purpose of this procedure, is the movement of material in-line, on the chainveyor, external to process areas, and external to walls of buildings on-site.

Type of Material. One of 6 groupings of IDCs with similar overall characteristics and/or origin. Types of materials are Plutonium metal, Miscellaneous Plutonium, Stabilized Oxides, Reactive Metals and Holdup Material, Analytical Samples, Duplex Materials, and Plutonium Solutions

Unburned (nonthermally stabilized) Oxide. Plutonium Oxide formed from metal or pyrophoric compounds that have not been stabilized by calcination. The material may contain plutonium suboxides (PuO_x), plutonium hydride (PuH_2), or Pu metal fines

4.1 Definitions (continued)

Vented Container. A stainless steel can with a tight fitting lid (taped) The tape shall not go completely around the container A produce can or a paint can is not considered to be vented

Vented Package. A package with an installed, filtered air vent

X-Taping A method for applying tape to a slip-lid container to form a tight-fitting lid without inhibiting escape of hydrogen gas Used for Category 1, 2, and 3 hydrogen-generating IDCs in accordance with PRO-872-HSP-31 15

4.2 Acronyms

AC	Administrative Control
CA	Corrective Action
CSOL	Criticality Safety Operating Limit
DOE	Department of Energy
HSP	Health and Safety Practices
IDC	Item Description Code
LCO	Limiting Condition for Operation
MC&A	Material Control and Accountability
NMC	Nuclear Materials Control
NMSL	Nuclear Material Safety Limit
POC	Point-of-Contact
Pu	Plutonium
PuSPS	Plutonium Stabilization and Packaging System
SAR	Safety Analysis Report
SES	Safety Evaluation Screen
SME	Subject Matter Expert
TRU	Transuranic
TSR	Technical Safety Requirement
USQD	Unreviewed Safety Question Determination

5. RESPONSIBILITIES

5.1 Employees (handling or storing Pu)

- Comply with the requirements of this procedure, and appropriate CSOLs/NMSLs

5.2 Facility Management

- Ensures compliance with the requirements of this procedure, and any specific transfer and storage criteria.
- Implements a method to track the requirements of this procedure with material stored in the facility on a continuing basis, including new items received from other facilities.
- Each facility SHALL utilize a single database to track all HSP-31.11 program materials. This database SHALL include the following attributes as a minimum:
 - Container ID
 - IDC
 - Location
 - Action date (if available)
- Ensures that the report on excess oxidation provides details such as the type of material and material weight is also sent to the Program Manager, Fire Protection Engineering (FPE), with an information copy to the cognizant Nuclear Safety organization.
- Provides written notification to FPE when a material is discovered that is not identified in this procedure.
- Complies with Material Control and Accountability requirements, including assay of special nuclear materials, as required
- Maintains accurate records on all material within the facility and modifies records when location changes and material status changes are carried out.
- Provides written notification to the Program Manager FPE, the Facility Manager as appropriate, and the Fire Department identifying items or areas which are out of compliance with this procedure, outlining the noncompliance and also providing plans to achieve compliance.

5.3 Fire Protection Engineering (FPE)

- Promulgates and implements the requirements of this procedure.
- Evaluates, authorizes, and concurs with changes or revisions to this procedure
- Submits and coordinates all changes or revisions to this procedure with Kaiser-Hill Nuclear Safety
- Maintains reports required by this procedure
- Provides guidance to Facility Management on handling of non-compliances.

5.4 Material Control and Accountability

- Submits new IDCs to FPE for inclusion or exemption from this procedure.
- Issues reports to FPE and the Project HSP-31 11 Point-of-Contact as requested to identify those items, subject to the requirements of this procedure.

5.5 Project HSP-31.11 Point-of-Contact (POC)

- Ensures project compliance with HSP-31 11 requirements and associated LCO surveillance(s)
- Develops Implementation Plans for changes/revisions to HSP-31.11 which impact the project
- Coordinates Corrective Actions (CAs) necessary to restore compliance and prevent recurrence of deficient items.

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- Quarterly, if directed by Facility Management, performs a MAP Assessment to evaluate compliance with the requirements identified in this document

5.5 Project HSP-31.11 Point-of-Contact (POC) (continued)

5.5 Project HSP-31.11 Point-of-Contact (POC) (continued)

- Ensures compliance of items prior to on-site transfer
- Verifies storage space and facility support for processing prior to facility receipt and shipment from the sending facility

5.6 Project HSP-31.11 Subject Matter Expert (SME)

- Assists in the development of Implementation Plans for changes/revisions to HSP-31 11 which impact the project
- Notifies the FPE organization when a discovery issue involving HSP-31 11 is identified
- Concurs in Corrective Actions to achieve compliance with HSP-31 11
- Reviews the "excess oxidation report" for project management
- Briefs/trains the appropriate project personnel on the requirements of HSP-31 11 as needed.
- Assists Project Management in tracking the monthly status of items scheduled for weighing and/or stabilization

6. REQUIREMENTS

6.1 General Requirements

- A New IDCs must be reviewed by FPE for inclusion or exemption from this procedure
- B Any Pu bearing material discovered or created in any building that is not addressed by this procedure **SHALL** be subject to review of the real and potential hazards and the extent of the problem The review and a corrective action plan **SHALL** be submitted to FPE by the Facility Management within 7 days of discovery The appropriate changes to this procedure will be processed to include this material
- C All containers/packages **SHALL** be visually inspected to ensure they are free of oil, grease, or other organic materials prior to use
- D All packaging, onsite transfer, and shipping activities **SHALL** be performed in accordance with MAN-T91-STSM-001, Site Transportation Safety Manual (STSM) and the Site SAR
- E Any item normally subject to the requirements of this procedure **MAY** be thermally stabilized and become exempt from this procedure
- F All Pu activities described in this procedure are to be conducted in accordance with the following
- NMSLs and CSOLs
 - Nuclear Safety Manual
 - STSM
 - Nuclear Criticality Safety Manual
 - Site Security Manual
 - Site SAR
 - Safeguards
 - Building Material Handling and Operations procedures
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6.1 General Requirements (continued)

- G Newly stabilized material **SHALL** be given a new identity to indicate it has been stabilized. The new identity can be in the form of a different IDC or a new, standardized Item Number obtained from Nuclear Materials Control.
- H Alloys other than those identified in this procedure (Delta, Tailwind, and Trunk) are to be handled and stored following the criteria for unalloyed Pu.

6.2 Atmosphere Requirements

- A When Pu is required to be stored in an inert atmosphere (nitrogen, helium, or argon) within a glovebox, the inert atmosphere **SHALL** comply with the applicable building Administrative Control (AC) surveillance requirements for inert atmospheres.
- B When Pu is required to be stored in an inert atmosphere within a glovebox during a maintenance outage activity, the resulting deinerting **SHALL not** exceed 48 hrs in duration. The maintenance event which causes the deinerting **SHALL not** exceed one maintenance event per week and containers **SHALL not** be moved in the glovebox during the deinerting period.
- C When an area does not meet the requirements for a continuous inert atmosphere, or the area is considered a noninert (air) atmosphere, the storage time limits for various material categories for noninert (air) atmospheres as specified in Section 9 of this procedure **SHALL** be followed.
- D When the inerting requirements cannot be met, then FPE **SHALL** be contacted prior to the situation for concurrence on the corrective actions to achieve compliance. FPE will coordinate with organizations such as the cognizant Nuclear Safety organization, Criticality Engineering, as required to develop the corrective actions.

6.2 Atmosphere Requirements (continued)

- E When an inert atmosphere is required for containers during packaging, the inert atmosphere **SHALL** be obtained from the glovebox inert atmosphere

6.3 Time Limits Requirements

- A Section 9, Tables 9-I through 9-VI, of this procedure **SHALL** be used for the storage time limits of specific material categories
- B Items subject to this procedure which are delta stabilized Pu may be brought into compliance initially by determining their as-packaged Baseline Weight
However, after the baseline weight has been established each item will be subject to the storage requirements specified in Section 9, Tables 9-I through 9-V

6.4 Weight Requirements

- A When Pu material is transferred or stored outside the line the required information **SHALL** be recorded on the Material Transfer and Storage Label, (RF-46148)

6.5 Location Requirements

In-Line transfers are transfers within the line Outside Line transfers are transfers from in-the-line to outside-the-line, or vice-versa

NOTE *Materials are divided into separate categories The transfer and storage requirements are divided into the following locations*

- *In-Line*
- *Outside Line*
- *Between Process Areas*
- *Offsite*

6.5 Location Requirements (continued)

- A When more than one material type is stored in a single transfer container, the total container weight **SHALL not** exceed the weight permitted for the lesser weight of the material categories in accordance with Section 9 and consistent with CSOL postings

6.6 Pyrophoric Material Requirements

- A All pyrophoric Pu compounds, non-stabilized oxide, fines, machine turnings, and metal pieces $\leq 50\text{g}$ **SHALL** be thermally stabilized before the expiration of time limits for storage
- B Miscellaneous Plutonium $\leq 50\text{g}$ **SHALL** be separated and thermally stabilized when found in storage with pieces greater than 50g Adjust the net weight and Pu weight of the items involved
- C Unburned oxides, reactive compounds, and hold-up material **SHALL** be thermally stabilized and repackaged before the expiration of time limits for storage

NOTE *Containers containing brushed (unstabilized) oxide have the prefix BR (brushed) attached to the identification number, i e , BRxxxx When thermally stabilized, the identification number is changed to TSxxxx*

7. INSTRUCTIONS

When handling and processing Pu materials in accordance with this procedure the user must check to see if the IDC for that material is listed in Table 7-1, which is a numerical listing of IDCs for materials subject to the requirements of this procedure. The IDC matrix refers the user to specific requirements (by material type) for movement and transfer, storage, and packaging. The requirements are listed in the following tables:

- Section 8, Movement and Transfer Requirements (Tables 8-I through 8-VI)
- Section 9, Storage Requirements (Tables 9-I through 9-VI)
- Section 10, Packaging Requirements (Tables 10-I through 10-VI)

Employees (handling or storing Pu)

- [1] Determine the IDC of the material and locate the IDC number in the IDC column of Table 7-1
- [2] IF the IDC is not listed in Table 7-1,
THEN refer to Appendix 1 for information concerning the IDC
- [3] Determine the correct Section to obtain the required IDC information
- [4] IF the IDC is inactive,
THEN contact FPE for guidance

08/12/02

Table 7-1, Movement and Transfer, Storage, and Packaging Requirements Matrix

IDC	IDC Description	Movement and Transfer Requirements	Storage Requirements	Packaging Requirements
010	Metal Button, RF, Acceptable Purity	Table 8-I	Table 9-I	Table 10-I
011	Metal Buttons, Other, Acceptable Purity	Table 8-I	Table 9-I	Table 10-I
012	Metal of Acceptable Purity	Table 8-I	Table 9-I	Table 10-I
013	Metal Buttons Awaiting Lab Analysis	Table 8-I	Table 9-I	Table 10-I
014	E/R Buttons - Spec	Table 8-I	Table 9-I	Table 10-I
015	Molten Salt Buttons, Acceptable Purity	Table 8-I	Table 9-I	Table 10-I
017	Non-Routine ER Metal, Unacceptable Purity	Table 8-I	Table 9-I	Table 10-I
019	DOR Buttons, Unacceptable Purity	Table 8-I	Table 9-I	Table 10-I
020	Non-Routine Metal, Unacceptable Purity	Table 8-I	Table 9-I	Table 10-I
024	LANL ER Metal Awaiting Analysis	Table 8-I	Table 9-I	Table 10-I
025 (≥ 50 wt % Pu)	AL Alloyed Anode Heel for SRP	Table 8-I	Table 9-I	Table 10-I
029	Anode Feed for E/R, DOR Rejects	Table 8-I	Table 9-I	Table 10-I
030	Metal Buttons, RFP, Non-Spec	Table 8-I	Table 9-I	Table 10-I
035	Metal Awaiting Disposition, Analysis Complete	Table 8-I	Table 9-I	Table 10-I
051	Anode Heel	Table 8-I	Table 9-I	Table 10-I
061 (Unstabilized)	Non-Spec Oxide	Table 8-III	Table 9-III	Table 10-III
064	Machining Sludge	Table 8-III	Table 9-III	Table 10-III
086 (≥ 23 wt % Pu)	Oxide E/R Scrape Out	Table 8-III	Table 9-III	Table 10-III
150	Solid Scrap or Free Metal, Recastable	Table 8-I	Table 9-I	Table 10-I
151	Free Metal, Fines Non-Spec	Table 8-II	Table 9-II	Table 10-II
152	Ingot Pieces, Unacceptable Purity	Table 8-I	Table 9-I	Table 10-I
153	Solid Scrap, Unacceptable Purity	Table 8-I	Table 9-I	Table 10-I
154 (≥ 23 wt % Pu)	E/R Scrape Out Material	Table 8-II	Table 9-II	Table 10-II
160	Rejected Parts	Table 8-I	Table 9-I	Table 10-I
161	Scrap Part	Table 8-I	Table 9-I	Table 10-I
170	Semi-Fab Circles, Squares, Plate, Sheet	Table 8-I	Table 9-I	Table 10-I
173	Semi-Fabricated Parts	Table 8-I	Table 9-I	Table 10-I
180	Finished Parts, New Production	Table 8-I	Table 9-I	Table 10-I

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Table 7-1, Movement and Transfer, Storage, and Packaging Requirements Matrix

IDC	IDC Description	Movement and Transfer Requirements	Storage Requirements	Packaging Requirements
185	Parts from Retirements	Table 8-I	Table 9-I	Table 10-I
190	Castings	Table 8-I	Table 9-I	Table 10-I
191	Ingot	Table 8-I	Table 9-I	Table 10-I
192	Feed Ingots	Table 8-I	Table 9-I	Table 10-I
193 (≥ 50 wt % Pu)	TA Target and Sub-Target, Acceptable Purity	Table 8-IV	Table 9-IV	Table 10-IV
195	Ingots of Unacceptable Purity	Table 8-I	Table 9-I	Table 10-I
196	Ingots Available for Blending	Table 8-I	Table 9-I	Table 10-I
197 (≥ 50 wt % Pu)	TA Target and Sub-Target, to be Leached	Table 8-IV	Table 9-IV	Table 10-IV
199	Shields	Table 8-IV	Table 9-IV	Table 10-IV
200	Standards	Table 8-II & 8-VI	Table 9-II & 9-VI	Table 10-II & 10-VI
210	Metal Samples, Acceptable Purity	Table 8-II	Table 9-II	Table 10-II
212	Metal Samples, Unacceptable Purity	Table 8-II	Table 9-II	Table 10-II
213	Mounted Metal Samples, Unacceptable Purity	Table 8-II	Table 9-II	Table 10-II
250	PuSPS Alloyed Clean Metal ≥ 98 wt. % Total Actinides	Table 8-I	Table 9-I	Table 10-I
251	PuSPS Unalloyed Clean Metal ≥ 98 wt. % Total Actinides	Table 8-I	Table 9-I	Table 10-I
252	PuSPS Impure Metal ≥ 50 wt. % < 98 wt. % Total Actinides	Table 8-I	Table 9-I	Table 10-I
253	PuSPS Low Purity Metal < 50 wt. % Total Actinides	Table 8-I	Table 9-I	Table 10-I
254	PuSPS PuU Metal Alloys > 50 wt. % Total Actinides	Table 8-I	Table 9-I	Table 10-I
300	Graphite Molds	Table 8-IV	Table 9-IV	Table 10-IV
301	Classified Graphite Shapes	Table 8-IV	Table 9-IV	Table 10-IV
303	Scarfed Graphite Chunks	Table 8-IV	Table 9-IV	Table 10-IV
312	Graphite, Coarse	Table 8-IV	Table 9-IV	Table 10-IV
333	Calcium Metal	Table 8-II	Table 9-II	Table 10-II
360 (≥ 23 wt % Pu)	Al Oxide Ceramic Crucibles	Table 8-III	Table 9-III	Table 10-III
365	Salt from Bad DOR Run	Table 8-III	Table 9-III	Table 10-III
392 (≥ 50 wt % Pu)	Unpulverized Sand, Slag and Crucible	Table 8-III	Table 9-III	Table 10-III
392P (≥ 50 wt % Pu)	Ground/Blended Sand, Slag and Crucible	Table 8-III	Table 9-III	Table 10-III

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Table 7-1, Movement and Transfer, Storage, and Packaging Requirements Matrix

IDC	IDC Description	Movement and Transfer Requirements	Storage Requirements	Packaging Requirements
400	Ion Column Feed <50 g/l Pu	Table 8-VI	Table 9-VI	Table 10-VI
401	Ion Column Feed >50 g/l Pu	Table 8-VI	Table 9-VI	Table 10-VI
409 (≥50 wt % Pu)	Molten Salt, 30% Unpulverized**	Table 8-III	Table 9-III	Table 10-III
411 (≥50 wt % Pu)	Electrorefining Salt - Final Disposition**	Table 8-III	Table 9-III	Table 10-III
411R (≥50 wt % Pu)	Electrorefining Salt - Repack	Table 8-III	Table 9-III	Table 10-III
411X (≥50 wt % Pu)	ER Salts TRU Waste	Table 8-III	Table 9-III	Table 10-III
413 (≥50 wt % Pu)	Impure Salt from Cell Cleanout**	Table 8-III	Table 9-III	Table 10-III
414 (≥50 wt % Pu)	Direct Oxide Reduction Salt - Unoxidized CA**	Table 8-III	Table 9-III	Table 10-III
416 (≥50 wt % Pu)	Zinc-Magnesium Alloy Metal	Table 8-I	Table 9-I	Table 10-I
427 (≥50 wt % Pu)	MSE Spent Dicesium Salt**	Table 8-III	Table 9-III	Table 10-III
429R (≥50 wt % Pu)	MSE and Scrub Alloy Spent Salt TRU Waste - Repack	Table 8-III	Table 9-III	Table 10-III
429X (≥50 wt % Pu)	MSE and Scrub Alloy Spent Salt TRU Waste	Table 8-III	Table 9-III	Table 10-III
433R (≥50 wt % Pu)	Scrub Alloy Spent Dicesium Salt CACL2 Salt TRU - Repack	Table 8-III	Table 9-III	Table 10-III
433X (≥50 wt % Pu)	Scrub Alloy Spent Dicesium Salt CACL2 Salt TRU	Table 8-III	Table 9-III	Table 10-III
435	CE/CA Scrub Alloy Spent Salt	Table 8-III	Table 9-III	Table 10-III
436 (≥50 wt % Pu)	Miscellaneous Salt Waste	Table 8-III	Table 9-III	Table 10-III
436R (≥50 wt % Pu)	Miscellaneous Salt Waste-Repack	Table 8-III	Table 9-III	Table 10-III
454 (≥50 wt % Pu)	Direct Oxide Reduction Salt - Oxidized CA	Table 8-III	Table 9-III	Table 10-III
454X (≥50 wt % Pu)	Direct Oxide Reduction Salt CACL2 Salt TRU Waste	Table 8-III	Table 9-III	Table 10-III
501	Ion Column Effluent	Table 8-VI	Table 9-VI	Table 10-VI
503	Miscellaneous Acid Waste Solution pH = or <2	Table 8-VI	Table 9-VI	Table 10-VI
505	Misc Neutral Waste Solution pH >2 but <12.5	Table 8-VI	Table 9-VI	Table 10-VI
508	Acid Chloride Waste	Table 8-VI	Table 9-VI	Table 10-VI
527	Miscellaneous Basic Waste Solution pH = or >12.5	Table 8-VI	Table 9-VI	Table 10-VI
529	Miscellaneous Organic Liquid Mixture	Table 8-VI	Table 9-VI	Table 10-VI
530	Miscellaneous Aqueous/Organic Liquid/Solution	Table 8-VI	Table 9-VI	Table 10-VI
533	Organics - Disc Level - Cool Oil - Car Tet - perchlor Etc	Table 8-VI	Table 9-VI	Table 10-VI
535	Organics Solution (Lab Quantities)	Table 8-VI	Table 9-VI	Table 10-VI
541	Analytical Lab Solution	Table 8-VI	Table 9-VI	Table 10-VI
599	N O L Solutions	Table 8-VI	Table 9-VI	Table 10-VI
600 (≥50 wt % Pu)	Al Mg Metal Alloy	Table 8-I	Table 9-I	Table 10-I

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Table 7-1, Movement and Transfer, Storage, and Packaging Requirements Matrix

IDC	IDC Description	Movement and Transfer Requirements	Storage Requirements	Packaging Requirements
601 (≥ 50 wt % Pu)	Al Mg Oxide	Table 8-III	Table 9-III	Table 10-III
602 (≥ 50 wt % Pu)	Scrub Alloy Metal (Dicesium)	Table 8-I	Table 9-I	Table 10-I
603	CE/CA Alloy Metal	Table 8-I	Table 9-I	Table 10-I
604 (≥ 50 wt % Pu)	GA/CA Alloy Metal	Table 8-I	Table 9-I	Table 10-I
620	AL Alloy Metal	Table 8-I	Table 9-I	Table 10-I
649	Cut Up Metal Feed for Pu/NP	Table 8-I	Table 9-I	Table 10-I
651 (≥ 50 wt % Pu)	Anode Heel from Pu/NP	Table 8-I	Table 9-I	Table 10-I
654 (≥ 50 wt % Pu)	ER Salt from PU/NP**	Table 8-III	Table 9-III	Table 10-III
Analytical Samples	Material for analysis or a standard used to verify analysis This includes portions of any IDC submitted for analysis	Table 8-V	Table 9-V	Table 10-V

** Salts with $>40\%$ Pu Content S/B Attract Level C

8. MOVEMENT AND TRANSFER REQUIREMENTS

Table 8-I, Movement and Transfer Requirements for Type I Material

TYPE I. Plutonium Metal - Large pieces (greater than 50g) - Includes unalloyed and alloyed buttons, ingots, parts and subassemblies

IDCs 010, 011, 012, 013, 014, 015, 017, 019, 020, 024, 025(≥ 50 wt % Pu), 029, 030, 035, 051, 150, 152, 153, 160, 161, 170, 173, 180, 185, 190, 191, 192, 195, 196, 250, 251, 252, 253, 254, 416(≥ 50 wt % Pu), 600(≥ 50 wt % Pu), 602(≥ 50 wt % Pu), 603, 604(≥ 50 wt % Pu), 620, 649, 651(≥ 50 wt % Pu)

Material outside of gloveboxes and vaults cannot be idle (not being moved) for a period greater than 51 hours

All transfers **SHALL** be conducted in accordance with appropriate CSOLs and NMSLs

A. In-Line

- 1 Package in a part carrier or a metal container with a tight fitting lid
- 2 By Conveyor Store in a part carrier or other approved container as specified in an approved procedure

B. Outside Line

Can Criteria

- 1 Package in a can as specified in Section 10, as applicable.
- 2 Visually inspect the inside of the can before use to ensure it is free of oil, grease, or other organic materials

First Method

- 1 Remove all loose corrosion products before packaging. If the loose corrosion products cannot be removed before transfer, the material **SHALL** be packaged in accordance with an approved procedure with the concurrence of FPE and the cognizant Nuclear Safety organization
- 2 Store metal in a metal can with a tight fitting lid
- 3 Remove from the line over a downdraft table or by an approved bag-out operation
- 4 Place in a second metal container with a taped or sealed lid
- 5 Record the total package weight on the outer container
- 6 Disposition loose corrosion products in accordance with Tables 8-III, 9-III and 10-III

Alternate method #1

- 1 Remove all loose corrosion products before packaging. If the loose corrosion products cannot be removed before transfer, the material **SHALL** be packaged in accordance with an approved procedure with the concurrence of FPE and the cognizant Nuclear Safety organization

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8. MOVEMENT AND TRANSFER REQUIREMENTS (continued)

- 2 Store metal in a metal container
- 3 Remove from the line over a downdraft table or by an approved bag-out procedure
- 4 Place in a metal container with a taped or sealed lid
- 5 Record the total package weight on the outer container
- 6 Disposition loose corrosion products in accordance with Tables 8-III, 9-III and 10-III

Alternate Method #2 – Parts and Subassemblies

- 1 Remove all loose corrosion products before packaging. If the loose corrosion products cannot be removed before transfer, the material **SHALL** be packaged in accordance with an approved procedure with the concurrence of FPE and the cognizant Nuclear Safety organization
- 2 Wrap metal in aluminum foil
- 3 Do **NOT** allow plastic to come in contact with the Pu
- 4 Remove from the line over a downdraft table or by an approved bag-out procedure
- 5 Place in metal container with a taped lid
- 6 Record the total package weight on the outer container.
- 7 Disposition loose corrosion products in accordance with Tables 8-III, 9-III and 10-III

C. Between Process Areas (External to Process Areas)

- 1 Package the material in accordance with the Outside Line Criteria.
- 2 Place the material in an approved package, **OR** package the material in accordance with an approved procedure with the concurrence of FPE and the cognizant Nuclear Safety organization
- 3 Outside of facilities, package material in accordance with the STSM and the Site SAR controls

D. Off Site (Outside DOE Controlled Property)

- 1 Package the material in accordance with the STSM
- 2 Ensure that the Pu is free of loose oxides
- 3 Do **NOT** place plutonium metal in direct contact with plastics and tape in the package

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8. MOVEMENT AND TRANSFER REQUIREMENTS (continued)

Table 8-II, Movement and Transfer Requirements for Type II Material

TYPE II. Miscellaneous Plutonium - Includes Pu metal pieces (less than or equal to 50g), combustible Pu fines, mounted or unmounted metallographic samples. Also includes any metal pieces less than 50g, regardless of IDC.

8 | IDCs 151, 154 (≥ 23 wt.% Pu), 200 (metal only), 210, 212, 213, and 333

Material **SHALL** not be left unattended outside of gloveboxes and vaults, and cannot be idle (not being moved) for a period greater than 9 hours.

Machine turnings being moved between process areas shall be immediately placed in-line at the new location.

All transfers **SHALL** be conducted in accordance with appropriate CSOLs and NMSLs.

A. In-Line (Zone I)

- 1 Mounted metallographic samples do **NOT** require a container.
- 2 Leave machine turnings in place until procedures are written for safe removal.
- 3 Place all other Pu in glass, metal, or in a special storage container with a tight fitting lid.
4. If a glass container is used, then it must be placed in a second container of metal or rigid plastic.

B. Outside Line (Zone II)

1. Place the mounted metallographic samples removed from a glovebox in a metal container with a tight fitting lid, bagged out of the line, and placed in a second metal container with a taped lid.
- 2 Place metal pieces less than or equal to 50g in a metal container with a taped or sealed lid, bagged out of line, and placed in a second metal container with a taped or sealed lid
- 3 Do **NOT** degrease machine turnings. Package and transport in accordance with an approved procedure and with the concurrence of FPE and the cognizant Nuclear Safety organization.
- 4 Place unmounted metallographic samples, metallic analytical samples, and small metal pieces in metal, plastic, or glass container with a lid, bagged out of the glovebox, and placed in a metal container with a taped lid.
- 5 If a glass container is used, then it must be placed in a second container of metal or rigid plastic

C. Between Process Areas (External to Process Areas)

- 1 Verify that the material has the approval of the receiver
2. Package the material in accordance with the Outside Line criteria.

8. MOVEMENT AND TRANSFER REQUIREMENTS (continued)

- | | |
|---|--|
| 3 | Place the material in an approved package, OR package the material in accordance with an approved procedure with the concurrence of FPE and the cognizant Nuclear Safety organization |
| 4 | Immediately place machine turnings in line at the new location. |
| 5 | External to facility, package in accordance with the STSM and the Site SAR controls |

D. Off Site (Outside DOE Controlled property)

- | | |
|---|-------------|
| 1 | Not Allowed |
|---|-------------|

8. MOVEMENT AND TRANSFER REQUIREMENTS (continued)

Table 8-III, Movement and Transfer Requirements for Type III Material

TYPE III. Unburned Oxides, Reactive Compounds and Holdup Material, PuO₂-x formed from metal or pyrophoric compounds, and material removed from the clean-up of duct work and gloveboxes, that has not been thermally stabilized. Includes glovebox floor sweepings containing metal fines, reactive Pu compounds (hydrides and nitrides), and salt residues.

DC-04
DC-01
IDCs 060, 061, 064, 086(≥23 wt % Pu), 360(≥23 wt % Pu), 365, 392(≥50 wt % Pu), 392P(≥50 wt % Pu), 409(≥50 wt % Pu), 411(≥50 wt % Pu), 411R(≥50 wt % Pu), 411X(≥50 wt % Pu), 413(≥50 wt % Pu), 414(≥50 wt % Pu), 427(≥50 wt % Pu), 429R(≥50 wt % Pu), 429X(≥50 wt % Pu), 433R(≥50 wt % Pu), 433X(≥50 wt. % Pu), 435, 436(≥50 wt % Pu), 436R(≥50 wt % Pu), 454(≥50 wt % Pu), 454X(≥50 wt. % Pu), 454S(≥50 wt % Pu), 601(≥50 wt % Pu), 654(≥50 wt % Pu)

Material **SHALL not** be left unattended outside of gloveboxes and vaults, and cannot be idle (not being moved) for a period greater than 9 hours

All transfers **SHALL** be conducted in accordance with appropriate CSOLs and NMSLs

A. In-Line (Zone I)

- DC-04
- 1 Place in a glass, metal, or special metal storage container with a tight fitting lid
 - 2 If a glass container is used, then it must be placed in a second container of metal or rigid plastic
 - 3 If duct holdup material (IDC H61), glovebox holdup, or machining sludge (IDC 064) do **NOT** place in a sealed container

B. Outside Line (Zone II)

- DC-04
- 1 Package and transport pyrophoric compounds, Pu oxides, salts, IDC 365, and oxides collected from brushing operations in accordance with an approved procedure and with the concurrence of FPE and the cognizant Nuclear Safety organization
 - 2 Place duct holdup material, glovebox holdup material, or machining sludge (IDC 064) in a 1 liter stainless steel can with an "x" taped lid bagged out or removed over a downdraft table Place in a second metal container with a mechanically secured or "x" taped lid Do **NOT** place the material in a sealed container

C. Between Process Areas (External to Process Areas)

- 1 Package and transport the material in accordance with the STSM and the Site SAR controls

D. Off Site (Outside DOE Controlled Property)

- 1 Not allowed

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8. MOVEMENT AND TRANSFER REQUIREMENTS (continued)

Table 8-IV, Movement and Transfer Requirements for Type IV Material

TYPE IV. Duplex Materials - Two materials in contact such as: plutonium in contact with massive metal pieces such as tantalum or stainless steel; or, plutonium in contact with graphite molds or mold pieces.

DC-91
IDCs 193(≥ 50 wt. % Pu), 197(≥ 50 wt. % Pu), 199, 300(≥ 20 wt. % Pu if stored in an 8801 Vollrath can or ≥ 16 wt. % Pu if stored in a polyethylene bottle), 301(≥ 20 wt. % Pu if stored in an 8801 Vollrath can or ≥ 16 wt. % Pu if stored in a polyethylene bottle), 303(≥ 20 wt. % Pu if stored in an 8801 Vollrath can or ≥ 16 wt. % Pu if stored in a polyethylene bottle), and 312(≥ 20 wt. % Pu if stored in an 8801 Vollrath can or ≥ 16 wt. % Pu if stored in a polyethylene bottle)

Material outside of gloveboxes and vaults cannot be idle (not being moved) for a period greater than 51 hours

All transfers **SHALL** be conducted in accordance with appropriate CSOLs and NMSLs.

A. In-Line (Zone I)

Tantalum targets, sub-targets, and shields

1. Store in a part carrier, film can, or a metal container with a tight fitting lid.
2. By conveyor: Store in a part carrier or other approved container as specified in an approved procedure.

Graphite molds and mold pieces

1. Unused molds or molds containing less than 1 gram of plutonium are exempt from this procedure.
2. Store in a part carrier or a metal container with a tight fitting lid.
3. For chunks and pieces stored in a 1 liter stainless steel can with a tight fitting lid, if the mass of plutonium is less than $M(\text{Pu}) = 0.35N + 86.58$ (where N = net weight), the material is exempt from this procedure
4. For chunks and pieces stored in a small stacker can, if the mass of plutonium is less than $M(\text{Pu}) = 0.35N + 94.72$ (where N = net weight), the material is exempt from this procedure
5. By conveyor. Store in a part carrier or other approved container as specified in an approved procedure.

B. Outside Line (Zone II)

Tantalum targets, sub-targets, and shields

First Method

1. Remove all loose corrosion products before packaging. If the loose corrosion products cannot be removed before transfer, the material **SHALL** be packaged in accordance with an approved procedure with the concurrence of FPE and the cognizant Nuclear Safety organization.
2. Store metal in a metal can with a tight fitting lid.

8. **MOVEMENT AND TRANSFER REQUIREMENTS (continued)**

- 3 Remove from the line over a downdraft table or by an approved bag-out operation
- 4 Place in a second metal container with a taped or sealed lid.
- 5 Record the total package weight on the outer container
- 6 Disposition loose corrosion products in accordance with Tables 8-III, 9-III and 10-III

Alternate method #1

- 1 Remove all loose corrosion products before packaging. If the loose corrosion products cannot be removed before transfer, the material **SHALL** be packaged in accordance with an approved procedure with the concurrence of FPE and the cognizant Nuclear Safety organization
- 2 Store metal in a metal container
- 3 Remove from the line over a downdraft table or by an approved bag-out procedure
- 4 Place in a second metal container with a taped lid
- 5 Record the total package weight on the outer container
- 6 Disposition loose corrosion products in accordance with Tables 8-III, 9-III and 10-III

Alternate Method #2 - Parts and Subassemblies

- 1 Remove all loose corrosion products before packaging. If the loose corrosion products cannot be removed before transfer, the material **SHALL** be packaged in accordance with an approved procedure with the concurrence of FPE and the cognizant Nuclear Safety organization
- 2 Wrap metal in aluminum foil
- 3 Do **NOT** allow plastic to come in contact with the Pu
- 4 Remove from the line over a downdraft table or by an approved bag-out procedure
- 5 Place in a metal container with a taped or sealed lid
- 6 Record the total metal package weight on the outer container
- 7 Disposition loose corrosion products in accordance with Tables 8-III, 9-III and 10-III

Graphite molds and pieces

- 1 Molds stored in drums with vents are exempt from this procedure
- 2 For chunks and pieces stored in a 1 liter stainless steel can with a tight fitting lid, if the mass of plutonium is less than $M(\text{Pu}) = 0.159 N + 38.83$ (where N = net weight), the material is exempt from this procedure
- 3 For chunks and pieces stored in a small stacker can, if the mass of plutonium is less than $M(\text{Pu}) = 0.159 N + 42.48$ (where N = net weight), the material is exempt from this procedure
- 4 Place in a metal container with a tight fitting lid

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8. MOVEMENT AND TRANSFER REQUIREMENTS (continued)

C. Between Process Areas (External to Process Areas)

Tantalum targets, sub-targets, and shields

- 1 Package the material in accordance with the Outside Line Criteria
- 2 Place the material in an approved transfer package, **OR** package the material in accordance with an approved procedure with the concurrence of FPE and the cognizant Nuclear Safety organization
- 3 Outside of facilities, package material in accordance with the STSM and the Site SAR controls

Graphite molds and pieces

- 1 Molds stored in drums with vents are exempt from this procedure
- 2 For chunks and pieces stored in a 1 liter stainless steel can with a tight fitting lid, if the mass of plutonium is less than $M(\text{Pu}) = 0.159 N + 38.83$ (where N = net weight), the material is exempt from this procedure.
- 3 For chunks and pieces stored in a small stacker can, if the mass of plutonium is less than $M(\text{Pu}) = 0.159 N + 42.48$ (where N = net weight), the material is exempt from this procedure
- 4 Place in a metal container with a tight fitting lid.
- 5 Remove from the line over a downdraft table or by an approved bag-out procedure
- 6 Place the material in an approved package, **OR** package the material in accordance with an approved procedure with the concurrence of FPE and the cognizant Nuclear Safety organization
- 7 Outside of facilities, package material in accordance with the STSM and the Site SAR controls

D. Off Site (Outside DOE Controlled Property)

Tantalum targets, sub-targets, and shields

- 1 Package the material in accordance with the STSM
- 2 Ensure that the Pu is free of loose oxides
- 3 Do **NOT** allow plastics or tape to have direct contact with Pu

8. **MOVEMENT AND TRANSFER REQUIREMENTS (continued)**

Table 8-V, Movement and Transfer Requirements for Type V Material

TYPE V. Analytical Samples - Material for analysis or a standard used to verify analysis. This includes portions of any IDCs covered by this procedure submitted for analysis.

Material outside of gloveboxes and vaults cannot be idle (not being moved) for a period greater than the time allotted for the sample type

All transfers **SHALL** be conducted in accordance with appropriate CSOLs and NMSLs

A. In-Line (Zone I)

- 1 Samples in metal, plastic, or glass containers may be combined in a holder or a second metal container with a tight fitting lid

B. Outside Line (Zone II)

- 1 Material must have approval of the receiver
- 2 Place the material in a metal, plastic, or glass container with a lid
- 3 If a glass container is used, then it must be placed in a second container of metal or rigid plastic
- 4 Bag out of line and place in a metal container with a taped lid

C. Between Process Areas (External to Process Areas)

- 1 Material must have the approval of the receiver
- 2 Package in accordance with Outside Line transfer and place in an approved transfer package
- 3 External to facilities, package in accordance with the STSM and the Site SAR controls

D. Off Site (Outside DOE Controlled Property)

- 1 Not allowed

8. MOVEMENT AND TRANSFER REQUIREMENTS (continued)

Table 8-VI. Movement and Transfer Requirements for Type VI Material

TYPE VI. Plutonium Solutions in Plastic Bottles - Aqueous and organic solutions with Pu concentrations greater than 1 mg/l (plutonium-in-solution).

89 | IDCs including, but not limited to 200, 400, 401, 501, 503, 505, 508, 527, 529, 530, 533, 535, 541, and 599

Material outside of gloveboxes and vaults cannot be idle (not being moved) for a period greater than 51 hours

All transfers **SHALL** be conducted in accordance with appropriate CSOLs and NMSLs.

A. In-Line (Zone I)

- 1 Place in low density polyethylene, high density polyethylene, or fluorinated high density polyethylene
- 2 Do NOT store in polypropylene

B. Outside Line (Zone II)

- 1 Material must have the approval of the receiver
- 2 Package and transport the material in accordance with an approved procedure and with concurrence of FPE and the cognizant Nuclear Safety organization.
- 3 Place no more than 3 75 liters of plutonium-in-solution in a four liter low density polyethylene, high density polyethylene, or fluorinated high density polyethylene bottle. Approval for the transfer of greater than 3.75 liters in a 4 liter bottle will only be granted by the Fire Protection Program Manager on an exception basis.
- 4 Maintain sufficient head space within bottles less than 4 0 liters to provide for expansion and gas generation in accordance with the STSM.
5. Ensure that the requirements stated in PRO-872-HSP-31.15 for Pu concentration storage time and venting have been met.

C. Between Process Areas (External to Process Areas)

1. Verify that the material has the approval of the receiver.
- 2 Package and transport the material in accordance with an approved procedure and with concurrence of FPE and the cognizant Nuclear Safety organization.
3. Place no more than 3 75 liters of plutonium-in-solution in a four liter low density polyethylene, high density polyethylene, or fluorinated high density polyethylene bottle. Approval for the transfer of greater than 3.75 liters in a 4 liter bottle will only be granted by the Fire Protection Program Manager on an exception basis
- 4 Maintain sufficient headspace within smaller bottles (less than 4 liters) to provide for expansion and gas generation in accordance with the STSM.

8. MOVEMENT AND TRANSFER REQUIREMENTS (continued)

- | | |
|---|---|
| 5 | Ensure that the requirements stated in PRO-872-HSP-31.15 for Pu concentration storage time and venting have been met. |
| 6 | Outside of facilities, package material in accordance with the STSM and the Site SAR controls |

D. Off Site (Outside DOE Controlled Property)

- | | |
|----|-------------|
| 1. | Not allowed |
|----|-------------|

9. STORAGE REQUIREMENTS

Table 9-I, Storage Requirements for Type I Material

TYPE I. Plutonium Metal - Large pieces (greater than 50g) - Includes unalloyed and alloyed buttons, ingots, parts and subassemblies

IDCs 010, 011, 012, 013, 014, 015, 017, 019, 020, 024, 025(≥ 50 wt % Pu), 029, 030, 035, 051, 150, 152, 153, 160, 161, 170, 173, 180, 185, 190, 191, 192, 195, 196, 250, 251, 252, 253, 254, 416(≥ 50 wt % Pu), 600(≥ 50 wt % Pu), 602(≥ 50 wt % Pu), 603, 604(≥ 50 wt % Pu), 620(≥ 50 wt % Pu), 649, 651(≥ 50 wt % Pu)

A. In-Line (Zone I)

- 1 Store within (inert or non-inert) in-line storage vaults or gloveboxes in a metal container with a tight fitting lid
- 2 In the Building 707 X-Y Retriever and the Building 371 Stacker/Retriever, store Pu pieces greater than 50g in a metal container

Periodic requirements for storage greater than 2 years

- 1 Reweigh unalloyed Pu metal for excess oxidation at least every 2 years of storage
- 2 Reweigh delta and other alloyed Pu metal for excess oxidation at least every 5 years of storage
- 3 Remove oxide and repackage metal for weight gain greater than $G = 0.015W + 2.7\text{g}$ (W = starting weight of metal) within 45 days
- 4 Record the total package metal weight
- 5 Dispose the oxide in accordance with Tables 8-III, 9-III, and 10-III

B. Outside Line (Zone II)

- 1 Store in a can type specified in Section 10, Packaging Requirements, as applicable
- 2 Reweigh unalloyed Pu metal for excess oxidation at least every 2 years of storage
- 3 Reweigh delta and alloyed Pu metal for excess oxidation at least every 5 years of storage
- 4 Remove oxide and repackage metal for weight gain greater than $G = 0.0064W + 1.2\text{g}$ (W = starting weight of the metal) within 45 days
- 5 Record the total metal package weight
- 6 Dispose the oxide in accordance with Tables 8-III, 9-III, and 10-III

9. STORAGE REQUIREMENTS (continued)

Parts and Subassemblies

- 1 Store in a container as specified in Section 10, as applicable
- 2 For storage up to 12 months
 - a) Remove all loose corrosion products
 - b) Wrap metal in aluminum foil.
 - c) Place with or without plastic in a metal container
 - d) Do NOT allow Pu to come in contact with the plastic
 - e) Remove from the line and place in a metal container with a tight-fitting lid
- 3 For storage of 12 months or longer
 - a) Remove all loose corrosion products
 - b) Wrap metal in aluminum foil
 - c) Place with or without plastic in a metal container
 - d) Do NOT allow Pu to come in contact with the plastic
 - e) Remove from the line and place in a metal container with a tight-fitting lid
 - f) Place in a second metal container with a tight-fitting lid
- 4 Reweigh unalloyed Pu metal for excess oxidation at least every 2 years of storage
- 5 Reweigh delta and alloyed Pu metal for excess oxidation at least every 5 years of storage
- 6 Remove oxide and repackage metal for weight gain greater than $G = 0.0064W + 1.2\text{g}$ (W = starting weight of the metal) within 45 days
- 7 Record the total metal package weight
- 8 Dispose the oxide in accordance with Tables 8-III, 9-III, and 10-III

C. Between Process Areas (External to Process Areas)

- 1 Not allowed

D. Off Site (Outside DOE Controlled Property)

- 1 Not Allowed

9. STORAGE REQUIREMENTS (continued)

Table 9-II, Storage Requirements for Type II Material

TYPE II. Miscellaneous Plutonium - Includes Pu metal pieces, regardless of IDC, (less than or equal to 50g), combustible Pu fines, mounted or unmounted metallographic samples.

8 | IDCs 151, 154 (≥ 23 wt % Pu), 200 (metal only), 210, 212, 213, and 333.

Storage time limits began July 1, 1996

A. In-Line (Zone I)

- 1 For storage in Building 707 X-Y Retriever and Building 371 Stacker-Retriever:
 - a) Store pieces less than 50g in a metal container with a tight fitting lid.
 - b) Calcine material before the 1 year storage limitation has expired.

For All Other Locations

1. Store in a metal container with a tight-fitting lid in contact with an operable heat detector
2. Calcine pieces with less than 50g before the 1 year storage limitation has expired
3. Do NOT degrease machine turnings.
 - a) Store up to 200g in a metal container with a tight fitting lid with a heat sink on an operable heat detector in a glovebox.
 - b) Cover chips with a minimum of 1 mm of oil
 - c) Leave material in place until procedures are written for safe disposition.
4. Store mounted metallographic samples in a metal container with a tight fitting lid for up to 1 year.
 - a) Calcine material before the 1 year storage limitation has expired.
5. Metal samples or pieces less than 50g each, including unmounted metallographic samples, limited to 200g of material in a 1 liter stainless steel can with a tight fitting lid may be stored for up to 1 year.
 - a) Calcine material before the 1 year storage limitation has expired.
6. Machine turnings may be degreased as a precursor to Thermal Stabilization per procedure. However, storage of degreased machine turnings is NOT permitted for greater than 8 hours

B. Outside Line (Zone II)

- 1 Not allowed.

C. Between Process Areas (External to Process Areas)

1. Not allowed

D. Off Site (Outside DOE Controlled Property)

1. Not allowed

9. STORAGE REQUIREMENTS (continued)

Table 9-III, Storage Requirements for Type III Material

TYPE III. Unburned Oxides, Reactive Compounds and Holdup Material, PuO₂-x formed from metal or pyrophoric compounds, and material removed from the clean-up of duct work and gloveboxes, that has not been thermally stabilized Includes glovebox floor sweepings containing metal fines, reactive Pu compounds (hydrides and nitrides), and salt residues.

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IDCs 060, 061, 086(≥23 wt % Pu), 360(≥23 wt % Pu), 365, 392(≥50 wt % Pu), 392P(≥50 wt % Pu), 409(≥50 wt % Pu), 411(≥50 wt % Pu), 411R(≥50 wt % Pu), 411X(≥50 wt % Pu), 413(≥50 wt % Pu), 414(≥50 wt % Pu), 427(≥50 wt % Pu), 429R(≥50 wt % Pu), 429X(≥50 wt % Pu), 433R(≥50 wt % Pu), 433X(≥50 wt % Pu), 435, 436(≥50 wt % Pu), 436R(≥50 wt % Pu), 454(≥50 wt % Pu), 454X(≥50 wt % Pu), 454S(≥50 wt % Pu), 601(≥50 wt % Pu), 654(≥50 wt % Pu)

Storage time limits began July 1, 1996

A. In-Line (Zone I)

Unburned Oxides (IDC 060 and 061)—Containers with stabilized IDC 060 and IDC 061 are exempt from this procedure

- DC-04
- 1 Store in a metal container with a tight-fitting lid in contact with an operable heat detector, **OR** in an inert atmosphere
 - 2 Store up to 200g up to 1 year without a heat sink
 - 3 Store up to 1000g up to 1 year with an approved heat sink
 - 4 Store up to 1000g, per position, in Building 707 X-Y Retriever up to 1 year using the following containment
 - a) Use a minimum of 1 metal container at each storage location
 - b) Use an approved heat sink for each container
 - 5 Store up to 1500g in Building 371 Stacker/Retriever up to 1 year using the following containment
 - a) Use an inner metal container or containers with tight-fitting lids (two containers are permitted as long as the total weight of material in both containers does not exceed 1500g per location)
 - b) These may be any combination of three types of containers
 - 1) A tall inner container
 - 2) A short inner container
 - 3) A 1 liter stainless steel can with a tight fitting lid
 - c) Use an outer metal container placed within a water wall location on an aluminum pallet
 - 6 Calcine all material before the time limitation has expired
 - 7 Change IDC or item number to reflect that calcination has been completed
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9. STORAGE REQUIREMENTS (continued)

Duct Holdup Material (IDC H61)

- 1 Store up to 2500g duct holdup material in a 1 liter stainless steel container can with a tight fitting lid (taped)
- 2 Do NOT store in a sealed container

Machining Sludge (IDC 064)

- 1 Store up to 200 g in a metal container with a tight-fitting lid in contact with an operable heat detector
- 2 Down-blended material is exempt from this procedure if mixed in accordance with FPE-approved procedures

Residue Salts and Sand, Slag & Crucible

IDCs 086, 392 (≥ 50 wt % Pu), 409 (≥ 50 wt % Pu), 411 (≥ 50 wt % Pu), 413 (≥ 50 wt % Pu), 414 (≥ 50 wt % Pu), 427 (≥ 50 wt % Pu), 434 (≥ 50 wt % Pu), 435, 454 (≥ 50 wt % Pu), 601 (≥ 50 wt % Pu), 654 (≥ 50 wt % Pu)

- 1 Store in a metal container with a tight-fitting lid in contact with an operable heat detector, OR in an inert atmosphere
- 2 Store up to 200g without a heat sink
- 3 Store up to 1000g with an approved heat sink
- 4 Store up to 1000g, per position, in Building 707 X-Y Retriever up to 1 year using the following containment
 - a) Use a minimum of 1 metal container at each storage location
 - b) Use an approved heat sink for each container
- 5 Store up to 1500g in Building 371 Stacker/Retriever using the following containment
 - a) Use an inner metal container or containers with tight-fitting lids (two containers are permitted as long as the total weight of material in both containers does not exceed 1500g per location)
 - b) These may be any combination of three types of containers
 - 1) A full inner container
 - 2) A short inner container
 - 3) An 8801 can
 - c) Use an outer metal container placed within a water wall location on an aluminum pallet

Reactive Compounds

- 1 Store up to 200g in a metal container with a tight fitting lid in contact with an operable heat detector in an inert atmosphere up to 72 hours
- 2 Store up to 200g glovebox holdup material in a 1 liter stainless steel container can with a tight fitting lid, either on an operable heat detector or in an inert atmosphere, for up to 3 months

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DC-04

DC-04

9. STORAGE REQUIREMENTS (continued)

IDC 365

- 1 Store in a metal container with a tight fitting lid in contact with an operable heat detector, **OR** in an inert atmosphere
- 2 Within 1 year of 7/28/99, the following **SHALL** be accomplished
 - a) Sieve the material on a 1/8 inch screen
 - b) Separate and calcine the fines
 - c) Separate and calcine all pieces less than 50g
 - d) Brush large pieces
 - e) Establish new weight for large pieces
 - f) Enter large pieces into the surveillance program (Treat this material as Type I material, "Plutonium Metal")
 - g) Record package weight
- 3 Reweigh unalloyed Pu metal for excess oxidation at least every 2 years of storage
- 4 Remove and repackage oxide for weight gain greater than $G = 0.015W + 2.7g$ (W = starting weight of metal) within 45 days
- 5 Record the total package weight

B. Outside Line (Zone II)

- 1 Package in accordance with Outside Line transfer
- 2 Store up to 200g of unburned oxide, reactive compounds, or machining sludge (IDC 064) up to 9 hours after the shift on which the material was packaged or received
- 3 Store up to 2000g of duct holdup material in a 1 liter stainless steel can with a tight fitting lid (taped)

IDC 365

- 1 Package in a can type specified in Section 10, Packaging Requirements, as applicable
- 2 Within 1 year of 7/28/99, the following **SHALL** be accomplished
 - a) Sieve the material on a 1/8 inch screen
 - b) Separate and calcine the fines
 - c) Separate and calcine all pieces less than 50g
 - d) Brush large pieces
 - e) Establish new weight for large pieces
 - f) Enter large pieces into the surveillance program (Treat this material as Type I material, "Plutonium Metal")
 - g) Record package weight
- 3 Reweigh unalloyed Pu metal for excess oxidation at least every 2 years of storage

DC 04

9. STORAGE REQUIREMENTS (continued)

- | | |
|---|---|
| 4 | Remove and repackage oxide for weight gain greater than $G = 0.0064W + 1.2g$
(W = starting weight of the metal) within 45 days |
| 5 | Record the total package weight |

C. Between Process Areas (External to Process Areas)

- | | |
|---|-------------|
| 1 | Not allowed |
|---|-------------|

D. Off Site (Outside DOE Controlled Property)

- | | |
|---|-------------|
| 1 | Not allowed |
|---|-------------|

9. STORAGE REQUIREMENTS (continued)

Table 9-IV, Storage Requirements for Type IV Material

DC-01	TYPE IV. Duplex Materials - Two materials in contact such as: plutonium in contact with massive metal pieces such as tantalum or stainless steel; or, plutonium in contact with graphite molds or mold pieces.
	IDCs 193(≥ 50 wt % Pu), 197(≥ 50 wt % Pu), 199, 300(≥ 20 wt % Pu if stored in an 8801 Vollrath can or ≥ 16 wt % Pu if stored in a polyethylene bottle), 301(≥ 20 wt % Pu if stored in an 8801 Vollrath can or ≥ 16 wt % Pu if stored in a polyethylene bottle), 303(≥ 20 wt % Pu if stored in an 8801 Vollrath can or ≥ 16 wt % Pu if stored in a polyethylene bottle), and 312(≥ 20 wt % Pu if stored in an 8801 Vollrath can or ≥ 16 wt % Pu if stored in a polyethylene bottle)

A. In-Line (Zone I)

Tantalum targets, sub-targets, and shields

- 1 Store within (inert or non-inert) in-line storage vaults or gloveboxes in a metal container with a tight fitting lid

Periodic Requirements for storage greater than 2 years

- 1 Reweigh Pu metal for excess oxidation at least every 5 years of storage.
- 2 Remove oxide and repackage metal for weight gain greater than $G = 0.015W + 2.7g$ (W = starting weight of metal) within 45 days
- 3 Record the total metal package weight
- 4 Disposition oxide in accordance with Tables 8-III, 9-III and 10-III

Graphite Molds and Mold Pieces

- 1 Unused molds, or molds not stored in drums, containing less than 1g of plutonium are exempt from this procedure
- 2 Store in a part carrier or a metal container with a tight fitting lid.
- 3 For chunks and pieces stored in a 1 liter stainless steel can with a tight fitting lid, if the mass of plutonium is less than $M(Pu) = 0.35N + 86.58$ (where N = net weight), the material is exempt from this procedure.
- 4 For chunks and pieces stored in a small stacker can, if the mass of plutonium is less than $M(Pu) = 0.35N + 94.72$ (where N = net weight), the material is exempt from this procedure

B. Outside Line (Zone II)

Tantalum targets, sub-targets, and shields

- 1 Store in a can type specified in Section 10, Packaging Requirements, as applicable
- 2 Reweigh Pu metal for excess oxidation at least every 5 years of storage
3. Remove oxide and repackage metal for weight gain greater than $G = 0.0064W + 1.2g$ (W = starting weight of the metal) within 45 days.

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9. STORAGE REQUIREMENTS (continued)

- 4 Record the total metal package weight
- 5 Disposition the oxide in accordance with Tables 8-III, 9-III and 10-III

Graphite molds and pieces

- 1 Molds stored in drums with vents are exempt from this procedure This exemption does not apply to chunks and pieces in drums
- 2 Molds stored in drums without vents **SHALL** be vented annually to remove any hydrogen present
- 3 For chunks and pieces stored in a 1 liter stainless steel can with a tight fitting lid, if the mass of plutonium is less than $M(\text{Pu}) = 0.159N + 38.83$ (where N = net weight), the material is exempt from this procedure
- 4 For chunks and pieces stored in a small stacker can, if the mass of plutonium is less than $M(\text{Pu}) = 0.159N + 42.48$ (where N = net weight), the material is exempt from this procedure.
- 5 Place in a metal container with a tight fitting lid
- 6 Remove from the line over a downdraft table or by an approved bag-out procedure

C. Between Process Areas (External to Process Areas)

- 1 Not allowed

D. Off Site (Outside DOE Controlled Property)

- 1 Not allowed

9. STORAGE REQUIREMENTS (continued)

Table 9-V, Storage Requirements for Type V Material

TYPE V. Analytical Samples - Material for analysis or a standard used to verify analysis. This includes portions of any IDC covered by this procedure submitted for analysis.

A. In-Line (Zone I)

- 1 Store up to 50g of chips or pyrophoric compounds up to 2 months
- 2 Place material in a metal, plastic, or glass container with a tight-fitting lid
- 3 Place the container within a second metal container with a lid and place in contact with an operable heat detector
- 4 Thermally stabilize material subject to this procedure before 2 months have expired unless retention is required for analysis Retention must have the approval of FPE and the cognizant Nuclear Safety organization

B. Outside Line (Zone II)

- 1 Not allowed

C. Between Process Areas (External to Process Areas)

- 1 Not allowed

D. Off Site (Outside DOE Controlled Property)

- 1 Not allowed

9. STORAGE REQUIREMENTS (continued)

Table 9-VI, Storage Requirements for Type VI Material

TYPE VI. Plutonium Solutions in Plastic Bottles - Aqueous and organic solutions with Pu concentrations greater than 1 mg/l (plutonium-in-solution).

DC-1 | IDCs including, but not limited to 200, 400, 401, 501, 503, 505, 508, 527, 529, 530, 533, 535, 541, and 599

A. In-Line (Zone I)

- DC-1 |
1. Place in low density polyethylene, high density polyethylene, or fluorinated high density polyethylene
 2. Do NOT store in polypropylene.
 4. Replace defective bottles when discovered.
 5. Vent in accordance with PRO-872-HSP-31 15

B. Outside Line (Zone II)

1. Package in accordance with Outside Line Transfer of Section 10
2. Approval for the storage of greater than 3.75 liters in a 4 liter bottle will be granted by the Fire Protection Program Manager on an exception basis.
3. Store and vent in accordance with PRO-872-HSP-31 15

C. Between Process Areas (External to Process Areas)

1. Not allowed.

D. Off Site (Outside DOE Controlled Property)

1. Not allowed

10. PACKAGING REQUIREMENTS

Table 10-I, Approved Storage (for Outside the Line Storage) Packaging Configuration for Type I Material

TYPE I. Plutonium Metal - Large Pieces (greater than 50g) - Includes unalloyed and alloyed buttons, ingots, parts and subassemblies

Description	Approved Storage Packaging Configuration
Buttons and Electrorefined Metal IDCs 010, 011, 012, 013, 014, 015, 017, 019, 020, 024, 025, 029, 030, 035, 051, 416, 600, 602, 603, 604, 620, 651	1 liter can with a tight fitting lid (taped) – bag out bag -[Bag-out bag optional if removed over a downdraft table]- Second bag- 2 liter can with a tight fitting lid (taped) or Sealed in metal container – bag out bag -[Bag-out bag optional if removed over a downdraft table]- Second bag- 2 liter can with a tight fitting lid (taped) or Sealed in metal container – bag out bag -[Bag-out bag optional if removed over a downdraft table]- Second bag- Sealed in metal container Packaged in DOE-STD-3013 Criteria containers
Ingots IDCs 150, 152, 153, 170, 191, 192, 195, 196, 649	1 liter can with a tight fitting lid – bag out bag -[Bag-out bag optional if removed over a downdraft table]- Second bag- 2 liter can with a tight fitting lid (taped) or 4 liter can with a tight fitting lid (taped) – bag out bag -[Bag-out bag optional if removed over a downdraft table]- Second bag- 10 gal can or Sealed in metal container – bag out bag -[Bag-out bag optional if removed over a downdraft table]- Second bag- Sealed in metal container Packaged in DOE-STD-3013 Criteria containers

10. PACKAGING REQUIREMENTS (continued)

Parts and Subassemblies IDCs 160, 161, 173, 180, 185, 190,	<p style="text-align: center;"><u>Up to 12 months</u></p> <p>Aluminum foil – bag out bag (or downdraft table) – lobster pot (taped) or Aluminum foil – bag out bag (or downdraft table)- Second bag- 8804/8808 S/S can (taped) or Aluminum foil – bag out bag, sealed container- Second bag- Packaged in DOE-STD-3013 Criteria containers</p> <p style="text-align: center;"><u>Over 12 months</u></p> <p>Aluminum foil, with or without plastic, downdraft table, metal container or Aluminum foil, downdraft table, lobster pot (taped), sealed metal container Packaged in DOE-STD-3013 Criteria containers</p>
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10. PACKAGING REQUIREMENTS (continued)

Table 10-II, Approved Storage (for Outside the Line Storage) Packaging Configuration for Type II Material

TYPE II. Miscellaneous Plutonium - Includes Pu metal pieces (less than or equal to 50g), combustible Pu fines, mounted or unmounted metallographic samples. Also includes any pieces less than 50g regardless of IDC.

Description	Approved Storage Packaging Configuration
Miscellaneous Plutonium IDCs 151,154, 200, 210, 333	Outside the line storage is not permitted. Refer to Type II of Sections 8 and 9 for transfer and storage packaging requirements.
Unbriquetted Machine Turnings	Outside the line storage is not permitted. Refer to Type II of Sections 8 and 9 for transfer and storage packaging requirements.
Mounted Metallographic Samples IDCs 212, 213	Outside the line storage is not permitted. Refer to Type II of Sections 8 and 9 for transfer and storage packaging requirements.

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10. PACKAGING REQUIREMENTS (continued)

**Table 10-III, Approved Storage (for Outside the Line Storage) Packaging Configuration
for Type III Material**

TYPE III. Unburned Oxides, Reactive Compounds and Holdup Material, $\text{PuO}_2\text{-x}$ formed from metal or pyrophoric compounds, and material removed from the clean-up of duct work and gloveboxes, that has not been thermally stabilized. Includes glovebox floor sweepings containing metal fines, reactive Pu compounds (hydrides and nitrides), and salt residues.

Description	Approved Storage Packaging Configuration
Unburned Oxides IDCs 060 and 061	Limited storage and quantities permitted Refer to Type III of Sections 8 and 9 for transfer and storage packaging requirements
Holdup Material (Duct or Glovebox) IDC 365	Refer to Type III of Sections 8 and 9 for transfer and storage packaging requirements Separation and stabilization required Refer to Type III of Sections 8 and 9 for transfer and storage packaging requirements
Residue Salts IDCs 086, 360, 392, 409, 411, 413, 414, 427, 429, 433, 435, 436, 454, 601, 654	Limited storage and quantities permitted Refer to Type III of Sections 8 and 9 for transfer and storage packaging requirements
Machining Sludge IDC 064	Refer to Type III of Sections 8 and 9 for transfer and storage packaging requirements

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10. PACKAGING REQUIREMENTS (continued)

**Table 10-IV, Approved Storage (for Outside the Line Storage) Packaging Configuration
for Type IV Material**

TYPE IV. Duplex Materials - Two materials in contact such as: plutonium in contact with massive metal pieces such as tantalum or stainless steel; or, plutonium in contact with graphite molds or mold pieces.

Description	Approved Storage Packaging Configuration
Duplex Materials IDCs 193, 197, 199, 300, 301, 303, 312	Refer to Type IV of Sections 8 and 9 for transfer and storage packaging requirements.

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10. PACKAGING REQUIREMENTS (continued)

Table 10-V, Approved Storage (for Outside the Line Storage) Packaging Configuration for Type V Material

TYPE V. Analytical Samples - Material for analysis or a standard used to verify analysis. This includes portions of any IDC covered by this procedure submitted for analysis.
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Description	Approved Storage Packaging Configuration
Analytical Samples	Outside the line storage is not permitted for material subject to this procedure Refer to Type V of Sections 8 and 9 for transfer and storage packaging requirements.

10. PACKAGING REQUIREMENTS (continued)

Table 10-VI, Approved Storage (for Outside the Line Storage) Packaging Configuration for Type VI Material

TYPE VI. Plutonium Solutions in Plastic Bottles - Aqueous and organic solutions with Pu concentrations greater than 1 mg/l (plutonium-in-solution).

Description	Approved Storage Packaging Configuration
Plutonium Solutions IDCs 200, 400, 401, 501, 503, 505, 508, 527, 529, 530, 533, 535, 541, 599	Refer to Type VI of Sections 8 and 9 for transfer and storage packaging requirements.

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11. DEVIATIONS FROM THIS PROCEDURE

Deviations from this procedure are permitted as follows

Employees (handling or storing Pu)

[1] **IF** this procedure cannot be performed as written,
THEN

[A] Stop work and ensure that the as-left condition is safe and secure

[B] Notify the responsible supervisor

[C] **IF** a deviation is necessary,
THEN submit the requested deviation in writing to the following, as appropriate

- FPE
- Criticality Safety
- The cognizant Nuclear Safety organization
- Traffic Management

Documentation must include a technical basis for the request and a maximum duration of the deviation

[D] **IF** a revision is necessary,
THEN submit the requested change to the following

- FPE
- Criticality Safety
- The cognizant Nuclear Safety organization
- Traffic Management

11. DEVIATIONS FROM THIS PROCEDURE (continued)

Fire Protection Engineering

[2] Evaluate the requested deviation(s) and respond in writing as follows

[A] Evaluate the requested deviation and respond with approval or denial with concurrence from the other appropriate organizations, such as the cognizant Nuclear Safety organization and Criticality Safety. The direction from FPE will provide specific details on the disposition of the request

[B] IF the deviation request is approved by FPE and the other concurring organizations,
AND requires a change to the procedure,
THEN process the requested change to this procedure in accordance with MAN-001-SDRM, Site Document Requirements Manual

11.1 Remedial Actions

Facility Management

[1] IF Operations requires that the procedure or process be performed with inoperable heat detection,
THEN

[A] Establish a Fire Watch in accordance with PRO-V60-HSP-34 06, Compensatory Measures and Fire Watches, as a minimum

[B] Follow the requirements of the building Authorization Basis (AB)

[2] Contact FPE to obtain additional required remedial actions (for example, removing combustibles)

Fire Protection Engineering

[3] Identify any additional required remedial actions

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11.2 Out-of-Compliance Conditions

Facility Management

[1] **IF** an item or area is determined to be out of compliance with this procedure,
THEN

[A] Determine the reporting requirements, as appropriate, in accordance with
3-X31-CAP-001, Corrective Action Process

[B] Notify FPE and the Fire Department

12. RECORDS

Many records, forms and documents created as a result of this procedure are contained in, and are part of, approved site/building procedures. The records processing requirements contained in the governing procedures for those records, forms and documents are to be followed when processing the completed records.

Record Identification	Record Type Determination	Protection/Storage Methods	Processing Instructions
As determined	QA Record (WIPP/LL/LLM)	<p>Completed (authenticated) WIPP/LL/LLM QA Records SHALL be transmitted to the NQA-1 Waste Records Center Building 441, within one (1) working day of completion. During this one (1) working day period, Responsible Managers SHALL continue to implement a reasonable level of protection to prevent loss and or degradation. Records SHALL be stored in standard office filing cabinets.</p> <p>Completed (authenticated) WIPP/LL/LLM QA Records that are not transmitted within the one (1) working day time period, SHALL be stored in one (1) hour fire-rated cabinets for a period not to exceed six (6) months.</p>	WIPP/LL/LLM Transmit record to NQA-1 Waste Records Center, Building 441 per 1-PRO-077-WIPP-005
As determined	QA Record (Non-WIPP/LL/LLM)	Responsible Managers SHALL implement a reasonable level of protection to prevent loss or degradation. Responsible Manager should define specific protection and storage methods for the records as defined in 1-V41-RM-001 Records Management Guidance for Records Sources. It is recommended that the Responsible Manager work with the Site Records Management organization to assure reasonable controls are being maintained.	When inactive (as defined in 1-V41-RM-001), transfer to Site Records Management in accordance with 1-V41-RM-001
As determined	In-Process QA Document	Same as QA Record (Non-WIPP/LL/LLM)	Continue prescribed processing of document(s). Once document(s) is/are complete (authenticated) it SHALL be handled and controlled as a QA Record.
As determined	In-Process WIPP/LL/LLM QA Document	Responsible Managers SHALL implement a reasonable level of protection to prevent loss or degradation.	Continue prescribed processing of document(s). Once document(s) is/are complete (authenticated) it SHALL be handled and controlled as a WIPP/LL/LLM QA Record.

12. RECORDS (continued)

Nuclear Materials Control

- [1] Maintain records of location, net weight, Pu weight, and packaging of each item stored in the facility.
- [2] Maintain the database of location, net weight, and packaging (as a minimum) of all SNM stored at the Site

13. REFERENCES

DOE Order 420 1, Facility Safety

DOE Order 5480 21, Unreviewed Safety Questions

DOE Order 5480 22, Technical Safety Requirements

DOE Order 5480 23, Nuclear Safety Analyses Reports

DOE/RL-96-57, Test and Evaluation Document for DOT Specification 7A, Type A Packaging

MAN-T91-STSM-001, Site Transportation Safety Manual (STMS)

MAN-001-SDRM, Site Documents Requirements Manual

MAN-088-NCSM, Nuclear Criticality Safety Manual

PRO-V60-HSP-34 06, Compensatory Measures and Fire Watches

PRO-872-HSP-31 15, Control of Generated Flammable Gas

Title 49 Code of Federal Regulations (CFR) Sub Part I Radioactive Materials

3-X31-CAP-001, Corrective Action Process

1-MAN-018-NSM, Nuclear Safety Manual

1-PRO-077-WIPP-005, Management of WIPP Information Prior to Transmittal to WIPP Project File

1-V41-RM-001, Records Management Guidance for Records Sources

1-X93-HSP-31 04, Controlling Introduction of Combustibles

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IDC List

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	ADJ GL ADJ NMC					X
	CNV IDC for conversion of COA					X
	H35 Hanford Metal Buttons					X
	H61 Duct Holdup Material				X	
	IPS In Process Solid/Solution					X
	U61 Pu/EU Oxide, Less than 10,000 ppm EU				X	
	Y61 Pu/EU Oxide, Over 10,000 ppm EU				X	
	Y61S Pu/EU Oxide, Over 10,000 ppm EU Standard					X
	000 Empty Containers					X
	001 Aqueous Process Sludge					X
	002 Second Stage Sludge					X
	003 Organic Waste Mobilization					X
	007 Bypass Sludge-Bldg. 374				X	
	010 Metal Button, RF, Acceptable Purity	X	I	ALL		
	011 Metal Buttons, Other Acceptable Purity	X	I	ALL		
	012 Metal of Acceptable Purity	X	I	ALL		
	012S Metal of Acceptable Purity-Standard					X
	013 Metal Buttons Awaiting Lab Analysis	X	I	ALL		
	014 E/R Buttons-Spec	X	I	ALL		
	015 Molten Salt Buttons, Acceptable Purity	X	I	ALL		
	016 Leached Part V Metal-Spec					X
	017 Non-Routine ER Metal, Unacceptable Purity	X	I	ALL		
	018 NP					X
	019 DOR Buttons, Unacceptable Purity	X	I	ALL		
	020 Non-Routine Metal, Unacceptable Purity	X	I	ALL		
	021 Non-Routine Hydride					X
	024 LANL ER Metal Awaiting Analysis	X	I	ALL		
	025 AL Alloyed Anode Heel for SRP	X	I	≥50 wt. % Pu	<50 wt. % Pu X	
	026 Leached Part V Metal, Unacceptable Purity					X
	027 Anode Feed for E/R, Non-Routine Metal					X
	029 Anode Feed for E/R, DOR Rejects	X	I	ALL		
	030 Metal Buttons, RFP, Non-Spec.	X	I	ALL		
	031 Anode Feed for E/R, Non-Spec					X
	032 Metal Buttons for Molten Salt Process					X
	033 Metal Buttons, Skin Turnings Molten Salt					X
	035 Metal Awaiting Disposition, Anal Complete	X	I	ALL		
	040 Turning Briquette					X
	041 Solid Scrap Briquette					X
	044 AM and Misc oxide				X	
	047 4.5% EU Oxide				X	
	050 Skulls					X
	051 Anode Heel	X	I	ALL		
	052 Oxide Pyro RF					X
	053 Hydroxide				X	
	053W Hydroxide <50 wt % fissile				X	
	054 Caustic Waste Treatment (CWT) Oxide				X	
	054H High Level CW Oxide				X	
	054HW High Level CW Oxide <50 wt % fissile				X	
	054W Caustic Water Treatment (CWT) Oxide <50 wt. % fissile				X	
	057 Oxide Awaiting Spec Analysis				X	

- (1) The requirements for the Movement and Transfer of material, depending on the Type, are contained in Section 8. The requirements for the Storage of material, depending on the Type, are contained in Section 9.
- (2) If inactive IDCs are found contact FPE for guidance.

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IDC List (continued)

IDC	DESCRIPTION	MATERIAL SUBJECT TO THE REQUIREMENTS OF THIS PROCEDURE	TYPE (1)	CONTAINERS	MATERIAL EXEMPT FROM THE REQUIREMENTS OF THIS PROCEDURE	INACTIVE IDCs (2)
DC-04 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01	057W Oxide Awaiting Spec Analysis <50 wt % fissile				X	
	058 Oxide Awaiting Production Categorization					X
	059S Oxide Standard in Diatomaceous Earth				X	
	060 Oxide (Stabilized)				X	
	060W Oxide <50 wt % fissile				Exempt if Stabilized	
	060C Encapsulated Oxide-Ceramic				Exempt if Stabilized	
	060S Oxide Standard					X
	060SW Oxide Standard <50 wt % fissile				Exempt if Stabilized	
	061 Non-Spec Oxide	X	III	Unstab Only		
	061W Non-Spec Oxide <50 wt % fissile				Exempt if Stabilized	
DC-04 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01	062 High Purity Oxide Heel				X	
	062W High Purity Oxide Heel <50 wt % fissile				X	
	063 Hydrides					X
	064 Machining Sludge (Unstabilized)	X	III			
	064T Machining Sludge (Stabilized)				X	
	065 Oxide Heel in Small Stacker Cans				X	
	065W Oxide Heel in Small Stacker Cans <50 wt % fissile				X	
	066 Uranium Metal for Cnt Lab					X
	067 Chlorinated Oxide				X	
	067W Chlorinated Oxide <50 wt % fissile				X	
DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01	067C Encapsulated Chlorinated Oxide				X	
	069 Roaster Oxide D-38				X	
	070 Nitrate feed				X	
	073 Mixed IDCs Outside the PSZ				X	
	080 Peroxide Cake (Includes Green Cake)				X	
	080W Peroxide Cake (Includes Green Cake) <50 wt % fissile				X	
	081 Impure Peroxide Cake (Includes Impure Green Cake)				X	
	081W Impure Peroxide Cake (Includes Impure Green Cake) <50 wt % fissile				X	
	082 Green Cake in Small Inner Can-Bldg 371				X	
	083 High Fired Oxide-DOR				X	
DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01	083W High Fired Oxide-DOR <50 wt % fissile				X	
	084 Hanford Purex Oxide				X	
	086 Oxide E/R Scrape Out	X	III	≥23 wt % Pu	<23 wt % Pu X	
	087 Impure Green Cake in Small Inner Cans Bldg 371				X	
	087W Impure Green Cake in Small Inner Cans Bldg 371 <50 wt % fissile				X	
	089 Grease Oxide (Green Cake)				X	
	090 Plutonium Tetrafluoride (PUF4)				X	
	090C Encapsulated Fluoride-Ceramic				X	
	091 Non-Spec Fluoride				X	
	092 Impure Fluoride Heel				X	
DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01 DC-01	093 Sodium Fluoride Pellets				X	
	097 Impure Fluoride in Small Inner Cans-Bldg 371				X	
	099 Grease Fluoride				X	
	100 Filtrate Recovery Nitrate Feed (Evaporator Bottom)					X
	140 Turnings (Acceptable for Briquetting)					X
	141 Fabrication Metal Fines					X
	142 Turnings (Unacceptable for Briquetting)					X
	145 Oxide Failed First L.O.I. Test				X	
	146 Oxide L.O.I. Reject				X	
	146S Oxide-L.O.I. Reject Standard					X
DC-01	146W Oxide-L.O.I. Reject <50 wt % fissile				X	

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146SW	Oxide-L.O I Reject Standard < 50 wt % fissile				X	
1484	Uncontaminated Class. Scrap Metal Shapes					X
150	Solid Scrap or Free Metal Recastable	X	I	ALL		
151	Free Metal, Fines Non-Spec.	X	II	ALL		
152	Ingot Pieces Unacceptable Purity	X	I	ALL		
153	Solid Scrap Unacceptable Purity	X	I	ALL		
153S	Solid Scrap Unacceptable Purity-Standard					X
154	E/R Scrape Out Material	X	II	≥23 wt. % Pu	<23 wt % Pu X	
159	Screenings From Oxide				X	
159W	Screenings From Oxide < 50 wt % fissile				X	
160	Rejected Parts	X	I	ALL		
161	Scrap Part	X	I	ALL		
170	Semi-Fab Circles, Squares, Plate, Sheet	X	I	ALL		
171	Rods					X
173	Semi-Fabricated Parts	X	I	ALL		
180	Finished Parts, New Production	X	I	ALL		

- (1) The requirements for the Movement and Transfer of material, depending on the Type, are contained in Section 8 The requirements for the Storage of material, depending on the Type, are contained in Section 9
- (2) If Inactive IDCs are found contact FPE for guidance

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IDC List (continued)

IDC	DESCRIPTION	MATERIAL SUBJECT TO THE REQUIREMENTS OF THIS PROCEDURE	TYPE (1)	CONTAINERS	MATERIAL EXEMPT FROM THE REQUIREMENTS OF THIS PROCEDURE	INACTIVE IDCs (2)
DC-01	185 Parts From Retirements	X	I	ALL		
	186 Unleached Part V Metal					X
	187 Unleached Metal Parts					X
	189 Recycled Binary Ingots					X
	190 Castings	X	I	ALL		
	191 Ingots	X	I	ALL		
	192 Feed Ingots	X	I	ALL		
	193 TA Target and Sub-Target, Acceptable Purity	X	IV	≥50 wt % Pu	<50 wt % Pu X	
	195 Ingots of Unacceptable Purity	X	I	ALL		
	196 Ingots Available for Blending	X	I	ALL		
DC-01	197 TA Target and Sub-Target, to be Leached	X	IV	≥50 wt % Pu	<50 wt % Pu X	
	199 Shields	X	IV	ALL		
	200 Standards	X	II ⁽¹⁾ & VI	ALL		
	2000 Supr Compac Dry LLW Paper and Plastic (861 and 863)					X
	201 Sealed Sources (Non-SNM S/B Attract. Level E)				X	
	210 Metal Samples, Acceptable Purity	X	II	ALL		
	211 Retained Metal Samples					X
	2116 Supr Compac TRU-Mix Compost Waste (831 832 833)				X	
	2117 Supr Compac TRU-Mix Lite Metal Waste (480)					X
	2118 Supr Compac TRU-Mix Glass Waste (444)					X
DC-01	2119 Supr Compac TRU-Mix Filter Waste (335 376 490 491)					X
	212 Metal Samples, Unacceptable Purity	X	II	ALL		
	213 Mounted Metal Samples, Unacceptable Purity	X	II	ALL		
	2216 Supr Compac TRU Compost Waste (821, 822, 825)				X	
	2216R Supr Compac TRU Compost Waste (821, 822, 825) Rep.					X
	2218 Supr Compac TRU Glass Waste (440 442)					X
	250 PuSPS Alloyed Clean Metal ≥ 98 wt. % Total Actinides	X	I	ALL		
	251 PuSPS Unalloyed Clean Metal ≥ 98 wt % Total Actinides	X	I	ALL		
	252 PuSPS Impure Metal ≥ 50 wt. % < 98 wt % Total Actinides	X	I	ALL		
	253 PuSPS Low Purity Metal < 50 wt. % Total Actinides	X	I	ALL		
DC-01	254 PuSPS PuU Metal Alloys > 50 wt. % Total Actinides	X	I	ALL		
	255 PuSPS Clean Oxide ≥ 85 wt. % Total Actinides				X	
	256 PuSPS Impure Oxide ≥ 30 wt % < 85 wt. % Total Actinides				X	
	257 PuSPS Low Purity Oxide < 30 wt % Total Actinides				X	
	258 PuSPS PuU Oxide ≥ 30 wt. % Total Actinides				X	
	259 PuSPS Chlorinated Oxides > 10 wt % Total Actinides				X	
	289 Low Purity Oxide Heel				X	
	289W Low Purity Oxide Heel <50 wt % fissile				X	
	290 Filter Sludge				X	
	292 Incinerator Sludge				X	
DC-01	295 Sewer Sludge					X
	296 Compost Waste					X
	299 Miscellaneous Inorganic Sludge				X	
	299R Miscellaneous Sludge-Repack				X	
	300 Graphite Molds	X	IV	≥20 wt % Pu if stored in an 8801 Vollrath can. ≥16 wt % Pu if stored in a polyethylene bottle	<20 wt. % Pu if stored in an 8801 Vollrath can. <16 wt. % Pu if stored in a polyethylene bottle	
	300H Graphite Molds-Hold for Safeguards	X	IV	ALL		
	3001 Trucon Waste					X
	3002 Sandia Mix #1 Waste					X
	3003 Sandia Mix #2 Waste					X
	3004 Sandia Mix #3 Waste					X
DC-01	3010 Composite Debris 1-10 % Organic				X	
	3011 Composite Debris >10 %				X	

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IDC List (continued)

DC-01

IDC	DESCRIPTION	MATERIAL SUBJECT TO THE EQUIREMENTS OF THIS PROCEDURE	TYPE (1)	CONTAINERS	MATERIAL EXEMPT FROM THE REQUIREMENTS OF THIS PROCEDURE	INACTIVE IDCs (2)
301	Classified Graphite Shapes	X	IV	≥20 wt. % Pu if stored in an 8801 Vollrath can. ≥16 wt. % Pu if stored in a polyethylene bottle.	<20 wt. % Pu if stored in an 8801 Vollrath can. <16 wt. % Pu if stored in a polyethylene bottle	
301U	Formerly Classified Graphite Shapes	X	IV	ALL		
302	Benelex and Plexiglass				X	

- (1) The requirements for the Movement and Transfer of material, depending on the Type, are contained in Section 8 The requirements for the Storage of material, depending on the Type, are contained in Section 9
- (2) If inactive IDCs are found contact FPE for guidance
- (3) Liquid standards are subject to PRO-872-HSP-31 15 requirements. Oxide standards are exempt, metal standards are Type II

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IDC	DESCRIPTION	MATERIAL SUBJECT TO THE REQUIREMENTS OF THIS PROCEDURE	TYPE (1)	CONTAINERS	MATERIAL EXEMPT FROM THE REQUIREMENTS OF THIS PROCEDURE	INACTIVE IDCs (2)
303	Scarfed Graphite Chunks	X	IV	≥20 wt. % Pu if stored in an 8801 Vollrath can. ≥16 wt. % Pu if stored in a polyethylene bottle.	<20 wt. % Pu if stored in an 8801 Vollrath can. <16 wt. % Pu if stored in a polyethylene bottle	
310	Graphite Scarfings and Fines				X	
310P	Blended Graphite Scarfings & Fines				X	
310S	Graphite Standard					X
311	Graphite Hoels					X
312	Graphite Coarse	X	IV	≥20 wt. % Pu if stored in an 8801 Vollrath can. ≥16 wt. % Pu if stored in a polyethylene bottle.	<20 wt. % Pu if stored in an 8801 Vollrath can. <16 wt. % Pu if stored in a polyethylene bottle	
312S	Coarse Graphite Standard	X	IV	ALL		
317	Immobilized Solid Inorganic Waste				X	
318	Hydride-from TA Crucibles					X
319	Oxide-from TA Crucibles				X	
320	Heavy Non-SS Metal (TA, W, PT)				X	
320R	Heavy Non-SS Metal-Repack					X
321	Lead				X	
323	Mixed IDCs Outside PA (Mixed Waste) Not D38					X
324	Mixed IDCs Outside PA (Hazardous Waste) Not D38					X
325	Mixed IDCs Outside PSZ (Mixed Waste)				X	
326	Mixed IDCs, Low Level Waste Outside the PSZ/PA				X	
327	Cemented Composite Chips					X
328	Filters, Ful-Flo, From Incinerator				X	
330	Combustibles, Dry				X	
330R	Combustibles, Dry-Repack				X	
331	Filters, Ful-Flo Not from Incinerator				X	
331S	Ful-Flo Filter Standard					X
332	Only Sludge				X	
333	Calcium Metal	X	II	ALL		
334	Blanket, Fire				X	
334R	Blanket, Fire-Repack				X	
335	Absolute Drybox Filters, Not Acid Contaminated				X	
335R	Absolute Drybox Filters, Not Acid Contaminated-Repack				X	
336	Combustibles, Wet				X	
336H	Combustibles, Wet-Hold for Safeguards				X	
336R	Combustibles, Wet-Repack				X	
337	Plastic (Teflon, PVC Poly, Etc)				X	
337H	Plastic (Teflon, PVC Poly Etc)- Hold for Safeguards				X	
337R	Plastic-Repack				X	
338	Filter Media				X	
338S	Insulation Standard					X
339	Leaded Drybox Gloves, Not Acid Contaminated				X	

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IDC	DESCRIPTION	MATERIAL SUBJECT TO THE REQUIREMENTS OF THIS PROCEDURE	TYPE (1)	CONTAINERS	MATERIAL EXEMPT FROM THE REQUIREMENTS OF THIS PROCEDURE	INACTIVE IDCs (2)
	340 Sledge from Size Reduction Area				X	
	341 Leaded Drybox Gloves, Acid Contaminated				X	
	342 Absolute Drybox Filters, Acid Contaminated				X	
	342R Absolute Drybox Filters, Acid Contaminated-Repack				X	
	344 Dry Calcium Oxide					X
	350 Immobilized Organic Solid Waste					X
DC-91	360 Al Oxide Ceramic Crucibles	X	III	≥23 wt % Pu	<23 wt % Pu X	
	363 Electrorefining Salt-First Use				X	
	364 Electrorefining Salt-Second Use				X	
	365 Salt from Bad DOR Run	X	III	ALL		
	368 MG Oxide Crucibles-Not LECO				X	
	368S MG Oxide Crucible Standard					X
	369 LECO Heel					X
	370 LECO Crucibles				X	
	371 Fire Brick				X	
	372 Grit				X	
	373 Fire Brick Heel				X	
	374 Blacktop, Concrete, Dirt, and Sand				X	
	374R Blacktop, Concrete, Dirt, and Sand-Repack				X	
	375 Oil Dry					X
	376 Processed Filter Media				X	
	377 Fire Brick, Coarse				X	
	378 Fire Brick, Pulverized or Fines				X	
	379 Fire Brick, Scarfed					X
	387 Returned SS&C Sweepings				X	
	387P Grounded/Blended Returned SS&C Sweepings					X
	390 Unpulverized Slag				X	
	390P Ground/Blended Slag				X	
	391 Unpulverized Sand and Crucible				X	
	391P Ground/Blended Sand and Crucible				X	
	392 Unpulverized Sand, Slag and Crucible	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
DC-91	392S Unpulverized Sand, Slag and Crucible Standard					X
	392R Unpulverized SS&C Repack/Processed	X	III	≥50 wt. % Pu		
	392P Ground/Blended Sand, Slag and Crucible	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	393 Sand, Slag and Crucible Heel				X	
DC-91	393S SS&C Heel Standard					X
	393P Ground/Blended Sand, Slag and Crucible Heel				X	
	393R SS&C Heel Repack/Processed				X	
	394 Magnesium Oxide Sand				X	
	394P Ground/Blended Magnesium Oxide Sand				X	

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IDC List (continued)

IDC	DESCRIPTION	MATERIAL SUBJECT TO THE REQUIREMENTS OF THIS PROCEDURE	TYPE (1)	CONTAINERS	MATERIAL EXEMPT FROM THE REQUIREMENTS OF THIS PROCEDURE	INACTIVE IDCs (2)
	395 Unpulverized Slag and Crucible				X	
	395P Ground/Blended Slag and Crucible				X	
	396 Pulverized Slag				X	
	396P Ground/Blended Slag				X	
	397 Pulverized Sand and Crucible					X
	398 Pulverized Sand, Slag and Crucible				X	
	398R Pulverized SS&C Repack/Processed				X	
	398S Pulverized Sand, Slag and Crucible Standard					X
	398P Ground/Blended Sand, Slag and Crucible				X	
	399 Pulverized Slag and Crucible					X
	400 Ion Column Feed < 5 g/l Pu	X	VI	ALL		
	401 Ion Column Feed > 5 g/l Pu	X	VI	ALL		
	402 Solvent Extraction Feed					X
	403 Solvent Extraction Product					X
	404 Molten Salt, CA, ZN, K				X	
	405 Molten Salt, Unknown % Unpulverized				X	
	406 Molten Salt, Unknown % Unpulverized				X	
	407 Molten Salt, 8% Unpulverized				X	
	408 Molten Salt, 8% Pulverized				X	
	409 Molten Salt, 30% Unpulverized	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	409S Molten Salt, 30% Unpulverized Standard					X
	410 Molten Salt, 30% Pulverized				X	
	411 Electrorefining Salt-Final Disposition	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	411R Electrorefining Salt-Repack	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	411S ER Salt Standard					X
	411X ER Salts TRU Waste	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	412 Gibbon Salt				X	
	413 Impure Salt from Cell Cleanout	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	414 Direct Oxide Reduction Salt-Unoxidized CA	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	414S Direct Oxide Reduction Salt Standard					X
	415 Plutonium Chloride Mixed Salt				X	
	416 Zinc-Magnesium Alloy Metal	X	I	≥50 wt. % Pu	<50 wt. % Pu X	
	417 Dicesium Hexachloroplutonate Salt (DCHP)				X	
	417S DCHP Salt Standard					X
	418 Molten Salt Packaged for LANL				X	
	419 Unpulverized Incinerator Ash				X	
	420 Pulverized Incinerator Ash				X	
	420f Ash and Debris from 1969 Fire				X	
	420P Blended Pulverized Incinerator Ash With IDC 425 & Like Matl				X	
	420S Pulverized Incinerator Ash Standard					X

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IDC	DESCRIPTION	MATERIAL SUBJECT TO THE REQUIREMENTS OF THIS PROCEDURE	TYPE (1)	CONTAINERS	MATERIAL EXEMPT FROM THE REQUIREMENTS OF THIS PROCEDURE	INACTIVE IDCs (2)
	421 Ash Heel				X	
	421S Ash Heel Standard					X
	422 Soot				X	
	423 Soot Heels				X	
	424 Immobilized Inorganic With Residual Organic Waste					X
	425 Fluid-Bed Ash				X	
	426 Returned IDC 413				X	
DC-01 DC-01	427 MSE Spent Dicesium Sal	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	428 Ash Selected for MMEC				X	
	429 Scrub Alloy Spent Salt				X	
	429R MSE and Scrub Alloy Spent Salt TRU Waste-Repack	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	429X MSE and Scrub Alloy Spent Salt TRU Waste	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	430 Resin, Unleached				X	
	431 Resin, Leached				X	
	433 Scrub Alloy Spent Dicesium Salt				X	
	433R Scrub Alloy Spent Dicesium Salt CACL2 Salt TRU-Repack	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
DC-01	433X Scrub Alloy Spent Dicesium Salt CACL2 Salt TRU	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	434 Free Calcium Containing Spent Salt				X	
	435 CE/CA Scrub Alloy Spent Salt	X	III	ALL		
	436 Miscellaneous Salt Waste	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	436R Miscellaneous Salt Waste-Repack	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	438 Insulation				X	
	438R Insulation-Hold for Safeguards				X	
	438 Insulation				X	
	440 Glass (Except Raschug Rings)				X	
	440R Glass-Repack				X	
	441 Unleached Raschug Rings Only				X	
	442 Leached Raschug Rings				X	
	443 Raschug Rings, Solvent Contaminated					X
	444 Ground/Leaded Glass				X	
	444R Ground/Leaded Glass-Repack				X	
DC-01	454 Direct Oxide Reduction Salt-Oxidized CA	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	454S Direct Oxide Reduction Salt-Oxidized CA Standard	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	454R Direct Oxide Reduction Salt CACL2 Salt-Repack	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	454X Direct Oxide Reduction Salt CACL2 Salt TRU Waste	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	470 Molten Salt Selected for MMEC					X
	472 Electrorefined Salt Selected for MMEC					X
	473 Electrorefined Salt Packaged for LANL				X	
	479 Empty Reusable Cans in a White Drum				X	
DC-01	480H Light Metal-Hold for Safeguards				X	

- (1) The requirements for the Movement and Transfer of material, depending on the Type are contained in Section 8 The requirements for the Storage of material, depending on the Type, are contained in Section 9
- (2) If Inactive IDCs are found contact FPE for guidance

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APPENDIX 1
Page 8 of 10

IDC List (continued)

IDC	DESCRIPTION	MATERIAL SUBJECT TO THE EQUIREMENTS OF THIS PROCEDURE	TYPE (1)	CONTAINERS	MATERIAL EXEMPT FROM THE REQUIREMENTS OF THIS PROCEDURE	INACTIVE IDCs (2)
QC-01	480 Light Metal				X	
	480R Light Metal				X	
	481 Light Non SS Metal (FE, CU AL SS) Prep for Leach				X	
	483 Scrap D-38 Metal (Unclassified)				X	
	484 Class Non-NM Scrap Metal Shapes Non BE				X	
	485 Scrap D-38 Classified Shapes				X	
	486 Classified Tooling for Disposal				X	
	487 Classified Plastic Shapes				X	
	488 Glovebox Parts with Lead				X	
	489 Classified BE Scrap Metal Shapes				X	
	490 HEPA Filters (24X24), Not Acid Contaminated				X	
	491 PreFilter				X	
	491R PreFilter-Repack				X	
	492 HEPA Filters (24X24), Acid Contaminated				X	
	500 Enriched Uranium Special Solution (Non-conforming)				X	
	501 Ion Column Effluent	X	VI	ALL		X
	502 HNO3 Distillate					
	503 Miscellaneous Acid Waste Solution Ph = or <2	X	VI	ALL		
	504 Uranium Solution for Crit Lab				X	
	505 Misc Neutral Waste Solution Ph >2 but <12.5	X	VI	ALL		
	508 Acid Chloride Waste	X	VI	ALL		
	509 Acid Chloride Solution Standard					X
	513 Steam Condensate and/or Cooling Water				X	
	519 Steam (H2O) Containing SS Material					X
	523 Miscellaneous Organic Solids				X	
	527 Miscellaneous Basic Waste Solution Ph = or >12.5	X	VI	ALL		
	528 Caustic Scrubs and/or Filtrates					X
	529 Miscellaneous Organic Liquid/Solution	X	VI	ALL		
	530 Miscellaneous Aqueous/Organic Liquid Mixture	X	VI	ALL		
	531 Miscellaneous Organic Sludge					X
	532 Miscellaneous Inorganic Solids				X	
	532A Downblended Oxides, <10% Pu, Contains Uranium				X	
	532B Downblended Oxides <10% Pu May Contain Moisture				X	
	532C Downblended Oxides, <10% Pu, Miscellaneous Oxides				X	
	532D Downblended Oxides, <10% Pu, Contains Neptunium				X	
	533 Organics-Disc Level-Cool Oil-Car Tet Perchlor Etc	X	VI	ALL		
	535 Organics Solution (Lab Quantities)	X	VI	ALL		
	536 Cemented Inorganics				X	
	537 Cemented Organics				X	
	538 Cemented Inorganics With Residual Organics				X	
	541 Analytical Lab Solution	X	VI	ALL		
	544 Excess Chemicals-Liquid				X	
	545 Excess Chemicals-Solid				X	
	599 N O L Solutions	X	VI	ALL		
	600 Al Mg Metal Alloy	X	I	≥50 wt % Pu	<50 wt % Pu X	
	601 Al Mg Oxide	X	III	≥50 wt % Pu	<50 wt % Pu X	
	602 Scrub Alloy Metal (Dicesum)	X	I	≥50 wt % Pu	<50 wt % Pu X	
	603 CE/CA Alloy Metal	X	I	ALL		
	604 GA/CA Alloy Metal	X	I	≥50 wt % Pu	<50 wt % Pu X	
	620 AL Alloy Metal	X	I	≥50 wt % Pu	<50 wt % Pu X	
	649 Cut Up Metal Feed for PU/NP	X	I	ALL		
	650 ER Button from PU/NP					X

- (1) The requirements for the Movement and Transfer of material depending on the Type are contained in Section 8 The requirements for the Storage of material depending on the Type are contained in Section 9
- (2) If Inactive IDCs are found contact FPE for guidance

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APPENDIX 1

Page 9 of 10

IDC List (continued)

IDC	DESCRIPTION	MATERIAL SUBJECT TO THE EQUIREMENTS OF THIS PROCEDURE	TYPE (1)	CONTAINERS	MATERIAL EXEMPT FROM THE REQUIREMENTS OF THIS PROCEDURE	INACTIVE IDCs (2)
DC-91	651 Anode Heel from PU/NP	X	I	≥50 wt. % Pu	<50 wt. % Pu X	
	653 Oxide from PU/NP				X	
	653W Oxide from PU/NP < 50 wt. % fissile				X	
	654 ER Salt from PU/NP	X	III	≥50 wt. % Pu	<50 wt. % Pu X	
	655 ER Ceramics from PU/NP				X	
	702 Sludge W/Wash Water					X
	710 Heavy Water (D2O)					X
	720 Gas (D2 HD H2S)				X	
	730 Deuterated Organic Compounds				X	
	777 Empty waste Box (Crate)				X	
	800 Solidified Sludge/Aqueous Waste-Bldg. 774				X	
	801 Solidified Organics-Bldg. 774				X	
	802 Solidified Lab Waste-Bldg. 774				X	
	803 Solidified Sludge-Bldg. 374				X	
	804 Saltcrete				X	
	805 Pondercrete				X	
	806 Solidified Process Solids					X
	807 Solidified Bypass Sludge-Bldg. 374				X	
	808 Mixed Solidified Lab Organics-Bldg. 774					X
	809 Cemented Resin					X
DC-91	810 Building 374 Polysalt					X
	812 Granulated Type Filter Media					X
	813 RCRA Regulated Sludge-LL Mixed Haz. Waste				X	
	814 Filter Socks-LL Mixed Haz. Waste					X
	815 Cemented Insulation and Filter Media					X
	816 Polymerized Organics-Small Containers				X	
	817 Dry Salt-Low Level				X	
	821 Combustibles Dry TRU Waste				X	
	822 Combustibles Wet TRU Waste				X	
	822X Stabilized, Neutralized, Dry Combustible TRU					X
	823 Cemented Miscellaneous Sludge				X	
	824 Light Metal TRU Waste				X	
	825 Plastic TRU Waste				X	
	826 Infrared Crystals and Assemblies					X
	831 Comb Dry TRU Mixed Waste (NMC, NDA, Non-PSZ)				X	
	832 Comb Wet TRU Mixed Waste (NMC, NDA, Non-PSZ)				X	
	832X Stabilized, Neutralized, Dry Combustible RCRA					X
	833 Plastic TRU Mixed Waste (NMC, NDA, Non-PSZ)				X	
	850 Macroencap LL Mixed Waste					X
DC-91	851 Comb Dry LL Mixed Waste (NMC, NDA, Non-PSZ)				X	
	851R Comb Dry LL Waste (NMC, NDA, Non-PSZ)-Repack				X	
	852 Comb. Wet LL Mixed Waste (NMC, NDA, Non-PSZ)				X	
	852R Comb Wet LL Waste (NMC, NDA, Non-PSZ)-Repack				X	
	853 Plastic LL Mixed Waste (NMC, NDA, Non-PSZ)				X	
	853R Plastic LL Waste (NMC, NDA, Non-PSZ)-Repack				X	
	854 Beryllium Metal				X	
	855 Ground Glass				X	
	856 Raschig Rings, Solvent Contaminated					X

- (1) The requirements for the Movement and Transfer of material, depending on the Type, are contained in Section 8 The requirements for the Storage of material, depending on the Type, are contained in Section 9
- (2) If inactive IDCs are found contact FPE for guidance

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APPENDIX 1

Page 10 of 10

IDC List (continued)

DC-A1

IDC	DESCRIPTION	MATERIAL SUBJECT TO THE EQUIREMENTS OF THIS PROCEDURE	TYPE (1)	CONTAINERS	MATERIAL EXEMPT FROM THE REQUIREMENTS OF THIS PROCEDURE	INACTIVE IDCs (2)
857	Vitrified Sludge-Bldg 774				X	
858	Ground/Surface Water					X
859	Repackaged LECO Crucibles in Metal Cans					X
861	Comb Dry LL Waste (NMC, NDA, Non-PSZ)				X	
861R	Comb Dry LL Waste (NMC, NDA, Non-PSZ)-Repack				X	
862	Comb Wet LL Waste (NMC, NDA, Non-PSZ)				X	
862R	Comb Wet LL Waste (NMC, NDA, Non-PSZ)-Repack				X	
863	Plastic LL Waste (NMC, NDA, Non-PSZ)				X	
863R	Plastic LL Waste (NMC, NDA, Non-PSZ)-Repack				X	
864	Medical/Infectious Waste					X
869	U-238 (D-38) Oxide LL Waste					X
870	Beryllium Fines					X
871	Titanium Turnings					X
880	Solid Excess Chemicals-Oxidizer					X
881	Solid Excess Chemicals-Cyanide or Sulfide					X
882	Solid Excess Chemicals-Reactive					X
883	Solid Excess Chemicals-Organic					X
884	Solid Excess Expired Chemicals-Acids					X
885	Solid Excess Expired Chemicals-Base					X
886	Solid Excess Expired Chemicals-Non-Specific				X	
888	Empty Open Top 55 gallon White Drum				X	
890	Liquid Excess Expired Chemicals-Acid				X	
891	Liquid Excess Expired Chemicals-Base					X
892	Liquid Excess Expired Chemicals-Organic				X	
893	Liquid Excess Expired Chemicals-Alcohol/Water				X	
894	Liquid Excess Expired Chemicals-Poisons				X	
910	DOE Acceptable Assemblies				X	
911	Surveillance Units				X	
912	Scrap EU Parts in Shipping Cont.					X
913	Non-WR Assemblies				X	
914	Retirement Assemblies				X	
915	WR Sub-Assemblies				X	
970	LL TSCA Waste-PCB Liquids					X
971	LL TSCA Waste-PCB Fluorescent Light Ballast					X
972	LL TSCA Waste-Misc PCB Debris				X	
973	LL TSCA Waste-PCB/Transformers/Capacitors					X
998	NMC for Discard of OY Drums after Approval					X
999	NMC Use Only					X
5001	Surface Contaminated Objects (SCO) for disposal				X	

- (1) The requirements for the Movement and Transfer of material depending on the Type, are contained in Section 8 The requirements for the Storage of material, depending on the Type, are contained in Section 9
- (2) If inactive IDCs are found contact FPE for guidance

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Rocky Flats Environmental Technology Site PRO-872-HSP-31.15

REVISION 2

CONTROL OF GENERATED FLAMMABLE GAS

Responsible Organization Fire Protection Engineering Effective Date 12/20/00

APPROVED BY Fire Protection Program Manager / 12/20/00
Title _____ Date _____

Bruce Campbell
Print Name _____ Approval Signature _____

N/A
Print Name of Responsible Manager (N/A if RSM is Approval Authority)

William Conner (SME)
Print Name _____ Approval Signature _____

The Responsible Manager Has Determined The Following Organization's Review Is Required. Review Documentation Is Contained In The Document History File.

Fire Protection Engineering
707-Closure Project
371/374-Closure Project
771-Closure Project
776/777-Closure Project
Engineering, Environmental, Safety, and Quality Programs
Material Stewardship
Remediation, Industrial Buildings D&D, and Site Services Project
Strategic Planning and Integration
Traffic Management

IMPORTANT NOTES

Periodic Review Frequency 4 years from the Effective Date
This procedure supercedes PRO-872-HSP-31.15, Revision 1
SES/USDQ Review USQD-RFP-01 0114-SMS, Revision 1 ISR Review SISRC-01-05 (12/20/00)

PADC-2000-03136

Reviewed for Classification/UCNI

By William Conner analyst

Date 12-20-00

141

① DCF Originator: Carol Christian *Carol Christian* 10/17/02
 Print Sign Date

Organization KH Engineering

Phone/Pager/Location 2141/NA/MV 2

② (Authorizes processing of request)

Responsible

Manager

Bruce Campbell *B. Campbell* 10/18/02

Print

Sign

Date

Organization KH Fire Protection Engineering

Phone/Pager/Location 7642/212-6384/MV 2

③ Assigned SME: Bill Conner

Print Name

Organization FPE

Phone/Pager/Location 6398/303.203.2134/B460

④ Control of Generated Flammable Gas
 Document Title

PRO-872-HSP-31 15 Rev 2

Existing Document Number and Revision

New Document Number and Revision (If Applicable)

Type of Document

☐ Policy

☒ Procedure (indicate type)

☐ Instruction

☐ Mgt Directive

☐ Technical

☐ Alarm

☐ Job Aid

☐ Manual

☒ Administrative

☐ Other

☐ Other

If "Other" is checked, please specify type _____

Type of Modification

☐ New

☐ One Time Use Only

☒ Change

☐ Minor

☐ Revision

☒ Major

☐ Cancellation

Proposed Modification

Updated LOEP and TOC

Deleted section on Residue Management

Added requirements for 10-gallon drums that generate hydrogen

Updated Reference Section

Updated Appendix 1

Justification

Information has been incorporated in section on TRU Waste Management

To bring 10-gallon drums into compliance with 31 15

External (Technical) Review

⑩ Reviewing Organization	⑪ Signature or Name of Reviewer	⑫ Date	⑩ Reviewing Organization	⑪ Signature or Name of Reviewer	⑫ Date
Subject-Matter Expert	/s/ Bill Conner	9/11/02	RISS	/s/ P. Thomas	9/24/02
FPE	/s/ Bruce Campbell	10/18/02	Strategic Planning	/s/ W. Harroun	9/20/02
707/776/777 Project	/s/ B. McClaire	9/12/02	Traffic	/s/ D. Welk	9/19/02
371/374 Project	/s/ T. Daily	10/7/02	TWCP Manager	/s/ B. Conner	9/22/02
771 Project	/s/ C. Morgan	9/23/02	TWCP QA Officer	/s/ C. Ferrera	9/12/02
KH ES&QP	/s/ K. Hukari	9/23/02	Add'l review comments	are in the history file	
Mat'l Stewardship	/s/ J. Cutonilli	9/24/02			

⑬ Special Reviews* (NOTE: Other Special Reviews may be required. See PRO-815-DM-01 for more information.)

ISR (Number or "Not Required") SISBC-02 10

TI Alignment (signature or N/A) N/A

Sign

Date

Reviewed for Classification

(If Required "N/A" if not)

By: _____

Date: _____

⑭ Approval (Completed to approve changes and cancellations only. New documents and revisions are approved by signature on the document cover page.)

Approval Authority

Print Name

Sign

Date

Effective Date: 10/24/02

DCF Originator Bill VandenBoogaard
Print Sign

Date

Organization Fire Protection EngineeringPhone/Pager/Location 4136/B130Responsible Manager Bruce Campbell
Print Sign

Date

Organization Fire Protection EngineeringPhone/Pager/Location 7642/212-6384/B130

Assigned SME Dave Tomecek

Organization Fire Protection EngineeringPhone/Pager/Location 2585/B130Control of Generated Flammable Gas
Document TitlePRO-872-HSP-3115 Rev 2
Existing Document Number and Revision

N/A

New Document Number and Revision (if applicable)

Type of Document

- ☐ Policy ☒ Procedure (indicate type) ☐ Instruction
☐ Mgt Directive ☐ Technical ☐ Alarm ☐ Job Aid
☐ Manual ☒ Admin ☐ Other ☐ Other

If "Other" is checked, please specify type

Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Minor
☐ Revision ☒ Major
☐ Cancellation

Proposed Modification

Page 2 Update the LOEP
 Page 3-4, Update the TOC
 Page 7, change Hot Work definition
 Page 13, change Step 5.2 D
 Page 14, change Section 5.3.1 Title and Steps 5.3.1 B and C
 Page 15, change Section 5.3.1 Title and Step 5.3.1 D
 Page 16, change Section 5.3.3 Title and Steps 5.3.3 A, B, and C
 Page 16, change Section 5.3.4 Title and Steps 5.3.4 A and B
 Page 17, change Section 5.3.4 Title and Steps 5.3.4 C and D
 Pages 51 thru 63, add new Appendix 4
 Pages 64 thru 66, delete Appendix 5
 Page 67, change page # ~~5~~ TEXT

Justification

Incorporate the new Residue and TRU Waste Vent Filter Monitoring Plan

External (Technical) Review

Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
Resp Mgr	<i>[Signature]</i>	5/14/02	Material Stewardship	/s/	5/14/02
FPE-SME	<i>[Signature]</i>	5/14/02	RISS	/s/	4/22/02
371/374 Closure Project	/s/	5/8/02	SP&I	/s/	4/29/02
707/776/777 Closure Project	/s/	4/23/02	ES&S	/s/	5/2/02
771 Closure Project	/s/	4/11/02			
ES&QP	/s/	5/9/02			

Special Reviews (NOTE Other Special Reviews may be required See PRO-815-DM-01 for more information)

ISR (Number or "Not Required")

SISec 02-08 (6-7-02)

TI Alignment (signature or N/A)

Sign

N/A

Date

Reviewed for Classification
(If Required, "N/A" if not)

By

N/A

Date

Approval (Completed to approve changes and cancellations only New documents and revisions are approved by signature on the document cover page)

Approval Authority

[Signature]
Print Name*[Signature]*
Sign5-14/02
Date

Effective Date

6/18/02

DCF Originator: Bill VandenBoogaard *VB* 1/24/02
Print Sign Date

Organization Fire Protection Engineering

Phone/Pager/Location 4136/B130

Responsible Manager Bruce Campbell *BC* 2/13/02
Print Sign Date

Organization Fire Protection Engineering

Phone/Pager/Location 7642/212-6384/B130

Assigned SME Bruce Campbell

Organization Fire Protection Engineering

Phone/Pager/Location 7642/212-6384/B130

Control of Generated Flammable Gas
Document Title

PRO-872-HSP-3115 Rev 2
Existing Document Number and Revision

N/A
New Document Number and Revision (if applicable)

Type of Document

- ☐ Policy ☒ Procedure (indicate type) ☐ Instruction
☐ Mgt Directive ☐ Technical ☐ Alarm ☐ Job Aid
☐ Manual ☒ Admin ☐ Other ☐ Other

If "Other" is checked, please specify type

Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Minor
☐ Revision ☒ Major
☐ Cancellation

Proposed Modification

- 1) Page 2, Update the LOEP
- 2) Page 3, Change the TOC
- Page 28, add new Section 5.4
- Page 4, change TOC
- 5) Add new Appendix 6

Justification

Incorporate exemptions into the procedure.
Streamline operations in B440
Improve safety and ALARA concepts during daily operations

External (Technical) Review:

Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
Resp Mgr	<i>VB</i>	2/13/02	Material Stewardship	<i>JS</i>	1-28-02
FPE-SME	<i>BC</i>	2/13/02	RISS	<i>JS</i>	2-8-02
371/374 Closure Project	<i>JS</i>	2-7-02	SP&I	<i>JS</i>	1-24-02
701/776/777 Closure Project	<i>JS</i>	2-20-02	ES&S	<i>JS</i>	2-7-02
771 Closure Project	<i>JS</i>	1-28-02			
ES&QP	<i>JS</i>	2-14-02			

Special Reviews: (NOTE: Other Special Reviews may be required. See PRO-815-DM-01 for more information.)

ISR (Number or "Not Required") SSCC 02-07 (3-20-02)

TI Alignment (signature or N/A)

Sign

N/A

Date

Reviewed for Classification
(If Required, "N/A" if not)

By

N/A

Date

Approval (Completed to approve changes and cancellations only - New documents and revisions are approved by signature on the document cover page.)

Approval Authority

Print Name

Bruce Campbell

Sign

BC

Date

2/13/02

Effective Date: 3-27-02

DCF Originator Bill VandenBoogaard
Print Sign Date

Organization Fire Protection Engineering

Phone/Pager/Location 4136/B130

Responsible Manager Bruce Campbell
Print Sign Date

Organization Fire Protection Engineering

Phone/Pager/Location 7642/303-212-6384/B130

Assigned SME Bruce Campbell

Organization Fire Protection Engineering

Phone/Pager/Location 7642/303-212-6384/B130

Control of Generated Flammable Gas
Document TitlePRO-872-HSP-31 15 Rev 2
Existing Document Number and RevisionN/A
New Document Number and Revision (if applicable)

Type of Document

- ☐ Policy ☒ Procedure (indicate type) ☐ Instruction
☐ Mgt Directive ☐ Technical ☐ Alarm ☐ Job Aid
☐ Manual ☒ Admin ☐ Other ☐ Other

If "Other" is checked, please specify type NA

Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Minor
☐ Revision ☒ Major Cancellation

Proposed Modification

Page 17, add IDC 529 to the list of IDCs in Section 5 3 5

Page 18, after the second paragraph of 5 3 5 D Add a NOTE to read
"Actinide and aqueous solutions > 0 001 g/l plutonium in solution, stored in
poly bottles (not in drums or in bags) outside of the line SHALL use an
approved vent cap and be evaluated by the Project Fire Protection Engineer
for impacts (if any) to the Combustible Loading Program."

Page 26A, add IDC 529 to the list of IDCs in Section 5 3 6

Add IDC's 559, 827, 828 and 829 to Appendix 1

Justification

To correct an omission

To correct a weakness in the procedure and provide a Corrective
Action Plan as a result of a Fast Scan

To correct an omission

So the procedure agrees with the Site Master IDC list.

External (Technical) Review

Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
RISS	/s/	8/1/01	SP&I	/s/	8-1-01
Mat. Stewardship	/s/	8/19/01			
371/374 Closure Project	/s/	9/12/01			
707/776/777 Closure Project	/s/	8/12/01			
771 Closure Project	/s/	9/19/01			
ES&QP	/s/	8/2/01			

Special Reviews (NOTE Other Special Reviews may be required. See PRO-815-DM-01 for more information.)

ISR (Number or "Not Required") S/SEC 02-01 (10-4-01)

TI Alignment (signature or N/A)

Sign N/A Date

PADC-2000-03136

Reviewed for Classification
(If Required, "N/A" if not)By N/A
Date N/A

Approval (Completed to approve changes and cancellations only New documents and revisions are approved by signature on the document cover page.)

Approval Authority

Print Name

Sign

8-20-01

Date

Effective Date 10-26-01

APPENDIX 2
Document Change Form
(Page 1 of 2)

Page 1 of <u>2</u>		DOCUMENT CHANGE FORM (DCF)		DCF # DC-01	
--------------------	--	----------------------------	--	----------------	--

<p>DCF Originator <u>Bill VandenBoogaard</u> <i>[Signature]</i> <u>5/10/01</u> <small>Print Sign Date</small></p> <p>Organization <u>Fire Protection Engineering</u></p> <p>Phone/Pager/Location <u>4136/B130</u></p>	<p style="text-align: center;">Control of Generated Flammable Gas <u>Document Title</u></p> <p style="text-align: center;">PRO-872-HSP-31 15 Revision 2 <u>Existing Document Number and Revision</u></p> <p style="text-align: center;">N/A <u>New Document Number and Revision (if applicable)</u></p>
<p>Responsible Manager <u>Bruce Campbell</u> <i>[Signature]</i> <u>5/10/01</u> <small>Print Sign Date</small></p> <p>Organization <u>Fire Protection Program Manager</u></p> <p>Phone/Pager/Location <u>7642/800-830-9853/B130</u></p>	<p style="text-align: center;"><u>Type of Document</u></p> <p> <input type="checkbox"/> Policy <input type="checkbox"/> Directive <input type="checkbox"/> Manual <input type="checkbox"/> Technical Standard <input checked="" type="checkbox"/> Procedure <input type="checkbox"/> Instruction <input type="checkbox"/> Job Aid <input type="checkbox"/> Other <u>NA</u> </p>
<p>Assigned SME <u>Bill Conner</u> <i>[Signature]</i> <u>8-13-01</u> <small>Print Sign Date</small></p> <p>Organization <u>The Croucher Group Inc</u></p> <p>Phone/Pager/Location <u>6398/212-2134/T130J</u></p>	<p style="text-align: center;"><u>Type of Modification</u></p> <p> <input type="checkbox"/> New <input checked="" type="checkbox"/> Change <input type="checkbox"/> One Time Use Only <input type="checkbox"/> Minor <input type="checkbox"/> Revision <input checked="" type="checkbox"/> Major <input type="checkbox"/> Cancellation </p> <p>Effective Date <u>8-24-01</u> Expiration Date. <u>—</u></p>
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<p style="text-align: center;"><u>Proposed Modification</u></p> <ol style="list-style-type: none"> 1) Update the LOEP and TOC 2) Change the first and last bullet in the third paragraph of the Scope. (Page 5) 3) Add a definition of "glovebag" (Page 6) 4) Move the NOTE to below the Exception (Page 14) 5) Change 5.3.5 A heading (Page 17) 6) Add 2 NOTES to Section 5.3.5 (Page 17) 7) Add a new Section to be numbered 5.3.6 (Page 26A) Renumber the existing 5.3.6 as 5.3.7 (Page 27 & 28) 8) Correct spelling error and add new IDCs (Page 34) 9) Add IDCs to Appendix 1 (Page 35, 39, 40, 41, 44, 47) 10) Delete reference to B771 tanks. (Page 48) 11) Update Appendix 4 including Tables 1 & 2 (Page 56 thru 60) 12) Add a new Table to Appendix 5 (Page 64) 	<p style="text-align: center;"><u>Justification</u></p> <p>To provide Safe Storage Times for Plutonium Solutions Directly in 55-Gallon Drums</p>
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Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
FPE	<u>N/A</u>	<u>N/A</u>	EES&QP	<u>N/A</u>	<u>N/A</u>
Material Stewardship			RISS		
371/374-Closure Project			SPI		
707-Closure Project			Traffic Management		
776/777-Closure Project					
771-Closure Project					

Approval Authority

Print Name _____

Sig

Date _____

10/24/02

LIST OF EFFECTIVE PAGES

<u>Pages</u>	<u>Effective Date</u>	<u>Pages</u>	<u>Effective Date</u>
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7	6/18/02		
8-9	12/20/00		
10	10/24/02		
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51-67	6/18/02		

Total number of pages: 70 pages (Pages 1-67 including 13A, 14A, 26A)

The following changes are active for this document:

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DC-02
DC-03
DC-04
DC-05

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DC-04

1. **PURPOSE**

The purpose of this procedure is to provide the requirements needed to prevent fires and explosions in containers, packages, tanks, and piping that contain flammable gas

2. **SCOPE**

This procedure applies to any identified material, process, and/or solution that generates flammable gas, whether it is inside or outside of a building or structure except as noted below. This includes gas generated due to biological, chemical, or radiological reactions

Appendix 1, Hydrogen Generating IDCs, lists those Item Description Codes (IDCs) which have been identified at Rocky Flats as possibly generating hydrogen. Appendix 2, Flammable Gas Generating Tanks and Piping, lists the tank and piping systems which have been identified as generating hydrogen

This procedure **SHALL not** apply to

- Identified materials, processes, and/or solutions that are not capable (through process knowledge) of producing flammable gas concentrations above 10 % of the Lower Flammable Limit (LFL) of the flammable gas
- Containers less than or equal to 4 liters that are within other packagings (with the outermost packaging vented, or otherwise not leaktight), except as noted in Section 5.3.5, Actinide Solutions in Plastic Bottles
- Materials that meet DOE 3013 requirements (PuSPS packaged items)
- Solid materials classified as non-hex generated or as measured Low-Level Waste (LLW)

Materials that generate flammable gas under this procedure include:

- Radiolysis of materials forming hydrogen
- Formation of H_2S from sulfur bearing aqueous solutions
- Evaporated residues from flammable liquids in tanks and piping undergoing Decontamination & Disposal (D&D)

DC-01

DC-01

2. SCOPE (continued)

Materials that are not considered to generate flammable gas under this procedure include:

- Compressed gases
- Evaporated flammable liquids from containers

For the purposes of this procedure the word **SHALL** denotes something is required The word **Should** denotes something is recommended

This is a complete revision and revision bars are omitted This revision supersedes PRO-872-HSP-31 15, Revision 1

3. DEFINITIONS AND ACRONYMS

3.1 Definitions

Breaching Breaching refers to any activity which potentially disturbs the integrity of any system or system contents.

Flammable Gas Any substance that exists in the gaseous state at normal or probable atmospheric temperature and pressure that is capable of propagating a flame under those conditions when mixed with the proper portions of an oxidant The capability of propagating a flame shall be determined by calculation and/or test that is consistent with best engineering practice

Flammable Limits The minimum and maximum concentrations of a flammable gas in a homogeneous mixture with a gaseous oxidant that will propagate a flame under the specific conditions present The flammable limits are affected by temperature, pressure, oxidant concentration and other gases

Glovebag A transparent, portable, flexible confinement system designed to provide point control of radioactive contamination.

Glovebox Any enclosure on a Zone I/IA ventilation system

DC-01

3.1 Definitions (continued)

DC-04
Hot Work Any temporary operation involving open flames or producing heat and/or sparks including brazing, cutting, grinding, soldering, arc welding, or torch-applied roofing Hot Work is conducted in accordance with MAN-129-FPPM, Fire Protection Program Manual, Chapter 2, Section 10, Hot Work

Item Description Code (IDC) An alphanumeric code which identifies the nature or form of nuclear material as well as the matrix of the material

Limiting Oxygen Concentration For a potentially flammable gas mixture, the concentration of oxygen below which a flame will not propagate under the specific conditions present

Lower Flammable Limit The lowest concentration of a flammable gas in an oxidant medium that will propagate a flame under the specific conditions present

Purging A technique of adding or displacing a gas in a system to render the atmosphere outside the flammable limits

Sealed Container Container (package) that is closed by an engineered tight seal such as an elastomer O-ring, a crimp seal, or a metal to metal seal

System Any tank, piping, container, box, drum, bottle, etc that contains flammable gas

Upper Flammable Limit The highest concentration of a flammable gas in an oxidizing medium that will propagate a flame under the specific conditions present

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3.2 **Acronyms**

D&D	Decontamination & Disposal
DIM	Discovery Issue Management
FPE	Fire Protection Engineering
IDC	Item Description Code
IDLH	Immediately Dangerous to Life and Health
LFL	Lower Flammable Limit
LOC	Limiting Oxygen Concentration
NEC	National Electric Code
NFPA	National Fire Protection Association
RCRA	Resource Conservation and Recovery Act
SCE	Site Chief Engineer
UFL	Upper Flammable Limit
USQ	Unreviewed Safety Question
WEMS	Waste and Environmental Management System

4. RESPONSIBILITIES

4.1 Employee

Ensures they have the appropriate training and tools to safely complete their assigned work activities under this procedure

Stops work and notifies their supervisor immediately of any suspected or actual unsafe condition in their work environment or if they are unable to comply with the requirements of this procedure

4.2 Facility Management

Ensures compliance with the requirements of this procedure

Executes an implementation plan to ensure compliance to the requirements of this procedure

Provides notification to Fire Protection Engineering (FPE) when questions exist concerning compliance

The shipping organization of the facility must alert the receiving organization of any liquids that are shipped that are within the scope of this document

4.3 Fire Protection Engineering

Serves as the focal point for issues of concern dealing with the generation of flammable gas

Takes appropriate measures to ensure that technical and programmatic disposition is provided for all issues of concern

Provides overall management and oversight of flammable gas issues including conducting assessments of the program to ensure that the requirements dealing with the generation of flammable gas are being followed.

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4.3 Fire Protection Engineering (continued)

Takes the appropriate action when additional requirements concerning the generation of flammable gas are identified.

Evaluates any necessary deviations from the requirements of this document

Formally communicates to the original identifying organization management the potential need for the Discovery Issues Management (DIM) or Unreviewed Safety Question (USQ) process initiation based upon review and analysis of the issue.

4.4 Industrial Hygiene, Fire Department, and On-Site Laboratory

Maintains an adequate supply of multi-gas detectors to monitor oxygen levels and flammable gas concentration in order to support this procedure.

Performs the appropriate calibration and maintenance of the gas monitors.

dc | 4.5 Supervision

Ensures that employees have the appropriate training and tools to safely complete their assigned work activities under this procedure

Notifies management immediately of any suspected or actual unsafe condition in their work environment or if employees are unable to comply with this procedure

dc | 4.6 TRU Waste Management

Ensures that monitoring plans are kept current, as appropriate

5. REQUIREMENTS

This procedure applies to flammable gas only and does not apply to dust or fibers and the fires or explosions associated with them. Flammable gas concentrations should be measured to account for non-uniform concentrations. The gas may have elevated concentrations high in the space, low in the space or near the generation locations.

5.1 General Requirements

NOTE *The criteria for Confined Space Entry and Hazardous Waste Operations (Occupational Safety and Industrial Hygiene Program Manual Chapter 21 and 23), Hot Work Permits, (Fire Protection Program Manual) and Hot Tapping (SM-145, Welding or Tapping on Equipment Containing Fluids) SHALL be followed, as appropriate, when utilizing this document. In addition contact Industrial Hygiene and Safety (IH&S) for information on specific hazards associated with materials, processes, or solutions.*

- A Any material, process, and/or solution that is known or suspected to generate flammable gas that is discovered or created in any building that is not addressed by this procedure **SHALL** be reviewed by FPE and IH&S to determine and identify all of the real and potential hazards. FPE **SHALL** make any appropriate changes to this procedure that **SHALL** be processed in accordance with Section 6 of this procedure.
- B Facility management **SHALL** notify FPE as soon as practicable of the discovery of any newly identified material, process, and/or solution which generates flammable gas.
- C Drums containing bottles of solution cannot be stored with more than 200 grams (weapons grade) Pu, in the drum.

5 1.1 Flammable Gas Controls for Tanks

This section itemizes the engineering controls which may be used to minimize the hazard associated with flammable gases. At least one method of control **SHALL** be selected for systems containing the IDCs listed in Section 5 of this procedure.

When more than one type of flammable gas is present, all types of flammable gas **SHALL** be assumed to be of the one with the lowest LFL or highest Upper Flammable Limit (UFL) as appropriate. This assumption **SHALL** be used only in determining flammable gas concentrations.

FPE should be contacted for additional guidance.

- A Maintain the system so that it is below 25 % of the LFL. When automatic instrumentation with safety interlocks, installed in accordance with 1-V51-COEM-DES-210, Site Engineering Process Procedure, the flammable gas concentration **SHALL** be permitted to be maintained at or below 60 % of the LFL.
- B Maintain oxygen concentration below the LOC.
- C Maintain the system above the UFL.
- D Electrically ground and bond the system.
- E Ensure that the system has sufficient structural integrity that it cannot be breached or ruptured in the event of explosion or deflagration associated with the flammable gas.

FPE **SHALL** review and approve the safety of systems that rely upon structural integrity.

5.1.1 Flammable Gas Controls for Tanks (continued)

- F** Employ isolation methods which include the following
- Flame arresters
 - Automatic fast-acting valves
 - Flame front diverters and/or extinguishing systems
 - Liquid seals

5.2 Additional Requirements

- A** **WHEN** the flammable gas concentration in the system or drum exceeds 75 % of the LFL and the controls listed in Section 5.1.1 above have not been applied, **THEN** contact FPE prior to any work for guidance and implementation of the appropriate National Electric Code (NFPA 70/77) Article 500 criteria
- B** Flammable gas concentrations **SHALL** be measured using a modified SW-846 GC/MS 8260 method or a technical equivalent, or by an alternative technique directed by Waste Isolation Pilot Plant guidelines
- C** **WHEN** Hot Work is performed within 35 ft. of a system that is known to generate flammable gas unless separated by a physical barrier evaluated by FPE, **THEN** the flammable gas concentration **SHALL** be measured within 35 ft around the Hot Work prior to the initiation of Hot Work to ensure that the flammable gas concentrations are below 25 % of the LFL

10/24/02

5.2 Additional Requirements (continued)

D When opening drums, or changing filters on drums, containing IDC 001, 002, 003, 290, 291, 292, 299, 330, 331, 332, 336, 340, 440, 441, 442, 800, 801, 802, 821, 822, 825, 831, 832 or 833, sparkless tools **SHALL** be used in accordance with NFPA 77

Exception: In-process drums are excluded. For drums containing IDC 330, 331, 336, 821, 822, 825, 831, 832, or 833, drums packaged after 11/97, or drums containing 10g plutonium or less are excluded (The 10g plutonium number was calculated assuming aged, stream average plutonium isotopic composition and normal americium-241 ingrowth)

E. **IF** the known americium-241 content of a 10 g or less plutonium drum exceeds the value given in Table 5.2-1, **THEN** non-sparking tools **SHALL** be used when opening the drum unless noted in "D" above

**Table 5.2-1
Plutonium and Americium Contents Not Requiring Non-sparking Tools**

Plutonium Content of Drum, g	Allowed AM-241 Content of Drum, g
1	0.14
2	0.13
3	0.11
4	0.10
5	0.09
6	0.07
7	0.06
8	0.05
9	0.03
10	0.02

5.3 Specific Requirements

The specific requirements listed in this procedure are based on conservative assumptions. Operations personnel may find that deviations from the specific requirements listed are more appropriate for the specific scenario, and deviations may be submitted in accordance with Section 6 of this procedure.

5.3.1 Hydrogen Generating IDCs Stored in Drums, Overpacks, or Standard Waste Boxes

DC-41

- A. All hydrogen generating IDCs (Category 1H, 2H, 3H) that are stored in drums that are not addressed in other areas of this section **SHALL** be vented with vents/filters that meet the requirements of 1-M12-WO-4034, Solid Radioactive Waste Packaging Requirements. See Appendix 1, Hydrogen Generating IDCs, for a list of the IDCs that are capable of generating hydrogen.
- B. Ten gallon drums used to store hydrogen generating material are governed by the following requirements (see CALC-000-FP-000700)
- Ten gallon drums used to store hydrogen generating material may be vented using a Nuclear Filter Technology Model 013 drum vent filter or FPE-approved equivalent, or by removing a 4-inch section of the drum lid gasket.
 - **IF** the drum is used to store plutonium oxide containing < 0.80 g/g plutonium, and the drum is vented by removing a section of the drum lid gasket, **THEN** the drum **SHALL** be limited to 800 g of plutonium.
 - Ten gallon drums with a section of the drum lid gasket removed are no longer Type A containers and, therefore, that modification may impact intrasite shipment.

DC-41

5.3.1 Hydrogen Generating IDCs Stored in Drums, Overpacks, or Standard Waste Boxes (continued)

DC-06

Exception: Ten gallon drums used to store hydrogen generating IDCs (Category 1H, 2H, 3H) that were purchased using the Procurement Specification for DOT-6C160 10-Gal Drum are not required to be vented

DC-01

NOTE *Containment Pressure Testing of 10 Gallon Drums is the technical basis for the above exception. The technical basis was written by T R Hergert and P T Knutson MST-94-008, Materials and Surface Technology-August 1994*

DC-06

C. Filters for selected IDCs **SHALL** be monitored under the Residue and TRU Waste Vent Filter Monitoring Plan. The IDCs **SHALL** be selected based on the monitoring plan.

DC-06

D. Filters that fail the filter testing procedure listed in the Residue and TRU Waste Vent Filter Monitoring Plan **SHALL** be replaced with WIPP compliant filters within the following time frames, unless modified by a facility AB document:

Plugged conditions – within 10 calendar days

High or low flow conditions – within 30 calendar days

E. The vent filters on 10-gallon drums used to store hydrogen generating IDCs (Category 1H, 2H, 3H) for 12 months or more **SHALL** be monitored under a plan developed for monitoring 10-gallon drum vent filters.

DC-04 | 5.3.1 Hydrogen Generating IDCs Stored in Drums, Overpacks or Standard Waste Boxes (continued)

NOTE *A Style 12(R) filter has the vent located on the top and the Style 13 filter has side vents*

DC-04 | D If the Tamper Indicating Device is removed from any drum or standard waste box in which a Style 12 (R) filter is installed,
THEN the Style 12 (R) filter **SHALL** be removed and replaced as soon as practical, with a new Style 13 filter regardless of the condition of the existing filter. All necessary precautions **SHALL** be taken during this procedure.

5.3.2 Hydrogen Generating IDCs Stored in Metal Containers

A All hydrogen generating IDCs (Category 1H, 2H, 3H) that are stored in metal containers that are not addressed in other areas of this section **SHALL not** be sealed (see Sealed Container definition) but **SHALL** be fitted with a vent filter in accordance with WIPP requirements

- Roll-seam containers (produce cans) **SHALL not** be used (i.e., slip-lid only)
- Containers **SHALL not** be taped totally around the circumference. Approximately 1/4 of the circumference **SHALL** be left unsealed or an X-pattern across the lid top can be used.

See Appendix 1 for a list of the IDCs that are capable of generating hydrogen in metal cans

B Type 1H and 2H IDCs **SHALL not** be stored in sealed metal containers. Vented containers are not considered sealed containers.

Exception Materials meeting DOE 3013 requirements and Category 2H IDCs that have been stabilized may be stored in sealed metal containers (meet the criteria in PRO-W89-HSP-31 11, Transfer and Storage of Plutonium for Fire Safety)

DC-04 5.3.3 Residues and TRU Waste Stored in Drums

- DC-04 A This section **SHALL** apply to all IDCs listed in the most current approved monitoring plan (Residue and TRU Waste Vent Filter Monitoring Plan) (Appendix 4)
- DC-04 B Filters that fail the filter testing procedure listed in the Residue and TRU Waste Vent Filter Monitoring Plan (Appendix 4) **SHALL** be replaced with WIPP compliant filters within the following time frames, unless modified by a facility AB document
- Plugged conditions-- within 10 calendar days
- High or low flow conditions – within 30 calendar days
- DC-04 C The requirements of the most current approved monitoring plan (Residue and TRU Waste Vent Filter Monitoring Plan) (Appendix 4) **SHALL** be used for storage of residues and TRU Waste stored in drums

NOTE *A Style 12(R) filter has the vent located on the top and the Style 13 filter has side vents*

- D If the Tamper Indicating Device is removed from any drum in which a Style 12 (R) filter is installed,
- THEN** the Style 12 (R) filter **SHALL** be removed and replaced with a new Style 13 filter regardless of the condition of the existing filter All necessary precautions **SHALL** be taken during this procedure

DC-04 5.3.4 Waste Stored in Standard Waste Boxes

- DC-04 A This section **SHALL** apply to all IDCs listed in the most current approved Residue and TRU Waste Vent Filter Monitoring Plan (Appendix 4)
- DC-04 B Filters that fail the filter testing procedure listed in the Residue and TRU Waste Vent Filter Monitoring Plan (Appendix 4) **SHALL** be replaced with WIPP compliant filters within the following time frames, unless modified by a facility AB document
- Plugged conditions – within 10 calendar days
- High or low flow conditions – within 30 calendar days

DC-04 5.3.4 Waste Stored in Standard Waste Boxes (continued)

- DC 04 C The requirements of the most current approved Residue and TRU Waste Vent Filter Monitoring Plan (Appendix 4) **SHALL** be used for storage of waste stored in standard waste boxes

NOTE *A Style 12 (R) filter has the vent located on the top and the Style 13 filter has side vents*

- DC 04 D IF the Tamper Indicating Device is removed from any standard waste box in which a Style 12 (R) filter is installed,
THEN the Style 12 (R) filter **SHALL** be removed and replaced with a new Style 13 filter regardless of the condition of the existing filter All necessary precautions **SHALL** be taken during this procedure

5.3.5 Actinide Solutions in Plastic Bottles

DC-02 Except where noted, all aqueous or organic solutions and/or colloidal suspensions described by these IDCs are subject to the requirements of this section, IDC 070, 200, 400, 401, 501, 503, 505, 508, 527, 529, 530, 533, 535, 541, and 599

DC-01 **NOTE** *All of the drums referred to in this section are removable head, 55-gallon drums*

- DC-01 A. Aqueous or organic solutions and/or colloidal suspensions <0.001 grams/liter (g/l) plutonium in solution stored in 4-liter bottles

- 1 No specific requirements governed by this procedure

DC-01 **NOTE** *See Section 5 3 6 for the requirements governing actinide solutions placed directly into 55-gallon drums*

- B Solutions of U²³⁵

- 1 No specific requirements governed by this procedure

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5.3.5 Actinide Solutions in Plastic Bottles (continued)

C. Aqueous or organic solutions and/or colloidal suspensions ≥ 0.001 g/l plutonium in solution (stored in a glovebox)

- 1 For aqueous or organic solution and/or colloidal suspensions with ≥ 0.001 g/l plutonium in solution,
THEN use of an approved vent cap is required

Exception: Aqueous solutions with a plutonium solution concentration of ≥ 0.001 g/l but < 0.15 g/l may be vented monthly by removing the cap for at least 1 minute and reinstalling

- 2 Approved vent caps **SHALL** be replaced when there is evidence of degradation
- 3 **IF** the bottle contains solutions that started as non-weapons grade (WG) Pu (i.e., extracted americium solutions),
THEN contact FPE for the storage configurations.

D. Aqueous solutions ≥ 0.001 g/l plutonium in solution (not stored in a glovebox)

The Tables included in this section **SHALL** be used to determine the Safe Storage Times for aqueous solutions

Storage times identified in this section are for 4-liter plastic bottles filled to a maximum of 3.75 liters when stored outside of a glovebox. The clock begins when the cap is tightened and ends when the bottle is returned, any plastic bags are removed, and the cap is removed for at least 1 minute. No more than 16 bottles **SHALL** be stored in any one drum with a maximum of 8 bottles per layer, however limiting a drum to 14 bottles with 7 bottles per layer is still acceptable. Drums **SHALL** be vented and have a vented rigid liner

NOTE

*Actinide and aqueous solutions > 0.001 g/l plutonium in solution, stored in poly bottles (not in drums or in bags) outside of the line **SHALL** use an approved vent cap and be evaluated by the Project Fire Protection Engineer for impacts (if any) to the Combustible Loading Program.*

5.3.5 Actinide Solutions in Plastic Bottles (continued)

NOTE *Storage times identified in the tables are based on the lowest practical normality (normality which Pu polymer formation will occur)
Normalities above this will produce less hydrogen and increase storage times Contact FPE for guidance with this*

- 1 Approved vent caps **SHALL** be replaced when there is evidence of degradation

NOTE *Bottles outside of the line Should be evaluated for the impact to the Combustible Loading Program*

Drums containing bottles of solution cannot be stored with more than 200 grams WG (weapons grade) Pu, in the drum.

Table 5.3.5-1, Non-vented Plastic Bottles (14 or 16 bottles/drum) (aqueous)

Non-vented plastic bottles		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Non-vented cap Double bagged bottle (non-vented) One or two liner bags (non-vented)
0.001 to <0.01	Not Limited	
0.01 to <0.1	80	
0.1 to <0.25	16	
0.25 to <0.5	7	
0.5 to <1.0	3	
1.0 to <1.5	2	
1.5 to 4.0	1	
>4.0	Not Allowed	

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5.3.5 Actinide Solutions in Plastic Bottles (continued)

Table 5.3.5-2, Vented Plastic Bottles (14 bottles/drum) (aqueous)

Vented plastic bottles (aqueous)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vent cap Double bagged bottle (non-vented) One or two liner bags (non-vented)
0.001 to <1.0	Not Limited	
1.0 to <1.5	152	
1.5 to <2.0	62	
2.0 to <3.0	30	
3.0 to <6.0	21	
6.0 to <10.0	14	
10.0 to <15.0	10	
15.0 to <20.0	7	
20.0 to <50.0	5	
>50.0	2	

Table 5.3.5-3, Vented Plastic Bottles in Vented Plastic Bags (14 bottles/drum) (aqueous)

Vented plastic bottles in vented plastic bags (aqueous)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vent cap Double bagged bottle (vented) One or two liner bags (non-vented)
0.001 to <1.0	Not Limited	
1.0 to <1.5	180	
1.5 to <2.0	90	
2.0 to <3.0	36	
3.0 to <15.0	28	
15.0 to <25.0	21	
>25.0	14	

Table 5.3.5-4, Vented Plastic Bottles in Vented Plastic Bags and Vented Drum Liner Bags (14 bottles/drum) (aqueous)

Vented plastic bottles in vented plastic bags and vented drum liner bags (aqueous)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vent cap Double bagged bottle (vented) One or two liner bags (vented)
0.001 to <1.5	Not Limited	
1.5 to <2.0	145	
2.0 to <3.0	45	
3.0 to <15.0	36	
15.0 to 25.0	32	
>25.0	16	

5.3.5 Actinide Solutions in Plastic Bottles (continued)

Table 5.3.5-5, Vented Plastic Bottles (16 bottles/drum) (aqueous)

Vented plastic bottles (aqueous)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vent cap Double bagged bottle (non-vented) One or two liner bags (non-vented)
0.001 to <1.0	Not Limited	
1.0 to <1.5	76	
1.5 to <2.0	44	
2.0 to <3.0	24	
3.0 to <6.0	16	
6.0 to <10.0	13	
10.0 to <15.0	9	
15.0 to <20.0	6	
20.0 to <50.0	4	
>50.0	1	

Table 5.3.5-6, Vented Plastic Bottles in Vented Plastic Bagout Bags (16 bottles/drum) (aqueous)

Vented plastic bottles in vented plastic bags (aqueous)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vent cap Double bagged bottle (vented) One or two liner bags (non-vented)
0.001 to <1.0	Not Limited	
1.0 to <1.5	120	
1.5 to <2.0	60	
2.0 to <3.0	28	
3.0 to <15.0	25	
15.0 to 25.0	18	
>25.0	11	

Table 5.3.5-7, Vented Plastic Bottles in Vented Plastic Bagout Bags and Vented Drum Liner Bags (16 bottles/drum) (aqueous)

Vented plastic bottles in vented plastic bags and vented drum liner bags (aqueous)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vent cap Double bagged bottle (vented) One or two liner bags (vented)
0.001 to <1.5	Not Limited	
1.5 to <2.0	100	
2.0 to <3.0	34	
3.0 to <15.0	32	
15.0 to 25.0	30	
>25.0	14	

5.3.5 Actinide Solutions in Plastic Bottles (continued)

- 2 **IF** a drum contains more than 200 grams WG Pu (may be aged),
 OR the bottles contain solutions that started as non-WG Pu (i.e., extracted
 americium solutions),
 THEN:

[A] Tables 5 3 5-1 through 5 3 5-7 do not apply

[B] Contact FPE for the storage times for non-compliant drums

**E. Organic solutions and/or colloidal suspensions ≥ 0.001 g/l plutonium in
 solution (not stored in a glovebox)**

The Tables included in this section **SHALL** be used to determine the Safe Storage
Times for organic solutions and/or colloidal suspensions

Storage times identified in this section are for 4-liter plastic bottles filled to a
maximum of 3.75 liters when stored outside of a glovebox. The clock begins
when the cap is tightened and ends when the bottle is returned, any plastic bags
are removed, and the cap is removed for at least 1 minute. No more than 16
bottles **SHALL** be stored in any one drum with a maximum of 8 bottles
per layer, however limiting a drum to 14 bottles with 7 bottles per layer is still
acceptable. Drums **SHALL** be vented and have a vented rigid liner.

- 1 Approved vent caps **SHALL** be replaced when there is evidence of
 degradation

NOTE *Bottles outside of the line **Should** be evaluated for the impact to the
 Combustible Loading Program*

5.3.5 Actinide Solutions in Plastic Bottles (continued)

Drums containing bottles of solution cannot be stored with more than 200 grams WG (weapons grade) Pu, in the drum.

Table 5.3.5-8, Non-vented Plastic Bottles (14 or 16 bottles/drum) (organic and/or colloidal suspensions)

Non-vented plastic bottles (14 or 16 bottles/drum) (organic and/or colloidal suspensions)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved non-vented cap Double bagged bottle (non-vented) One or two liner bags (non-vented)
0.001 to <0.01	Not Limited	
0.01 to <0.015	365	
0.015 to <0.025	60	
0.025 to <0.05	18	
0.05 to <0.10	8	
0.10 to <0.25	3	
0.25 to 0.50	1	
>0.50	Not Allowed	

Table 5.3.5-9, Vented Plastic Bottles (14 bottles/drum) (organic and/or colloidal suspensions)

Vented plastic bottles (14 bottles/drum) (organic and/or colloidal suspensions)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vented cap Double bagged bottle (non-vented) One or two liner bags (non-vented)
0.001 to <0.20	Not Limited	
0.20 to <0.25	365	
0.25 to <0.35	90	
0.35 to <0.5	45	
0.5 to <1.0	14	
1.0 to <2.0	5	
2.0 to <3.0	3	
3.0 to <4.0	2	
4.0 to <5.0	1	
>5.0	Not Allowed	

5.3.5 Actinide Solutions in Plastic Bottles (continued)

**Table 5.3.5-10, Vented Plastic Bottles in Vented Plastic Bagout Bags (14 bottles/drum)
(organic and/or colloidal suspensions)**

Vented plastic bottles in vented plastic bagout bags (14 bottles/drum) (organic and/or colloidal suspensions)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vented cap Double bagged bottle (vented) One or two liner bags (non-vented)
0.001 to <0.20	Not Limited	
0.20 to <0.25	365	
0.25 to <0.35	120	
0.35 to <0.5	50	
0.5 to <1.0	16	
1.0 to <2.0	7	
2.0 to <3.0	4	
3.0 to <4.0	3	
4.0 to <6.0	2	
6.0 to 10.0	1	
>10.0	Not Allowed	

**Table 5.3.5-11, Vented Plastic Bottles in Vented Plastic Bagout Bags and Vented Drum
Liner Bags (14 bottles/drum) (organic and/or colloidal suspensions)**

Vented plastic bottles in vented plastic bagout bags and vented drum liner bags (14 bottles/drum) (organic and/or colloidal suspensions)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vented cap Double bagged bottle (vented) One or two liner bags (vented)
0.001 to <0.20	Not Limited	
0.20 to <0.35	365	
0.35 to <0.5	75	
0.5 to <1.0	18	
1.0 to <2.0	7	
2.0 to <3.0	4	
3.0 to <5.0	3	
5.0 to <6.0	2	
6.0 to 10.0	1	
>10.0	Not Allowed	

5.3.5 Actinide Solutions in Plastic Bottles (continued)

Table 5.3.5-12, Vented Plastic Bottles (16 bottles/drum) (organic and/or colloidal suspensions)

Vented plastic bottles (16 bottles/drum) (organic and/or colloidal suspensions)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vented cap Double bagged bottle (non-vented) One or two liner bags (non-vented)
0.001 to <0.20	Not Limited	
0.20 to <0.25	365	
0.25 to <0.35	70	
0.35 to <0.5	32	
0.5 to <1.0	11	
1.0 to <2.0	4	
2.0 to <4.0	2	
4.0 to <5.0	1	
>5.0	Not Allowed	

Table 5.3.5-13, Vented Plastic Bottles in Vented Plastic Bagout Bags (16 bottles/drum) (organic and/or colloidal suspensions)

Vented plastic bottles in vented plastic bagout bags (16 bottles/drum) (organic and/or colloidal suspensions)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vented cap Double bagged bottle (vented) One or two liner bags (non-vented)
0.001 to <0.20	Not Limited	
0.20 to <0.25	365	
0.25 to <0.35	90	
0.35 to <0.5	40	
0.5 to <1.0	13	
1.0 to <2.0	6	
2.0 to <4.0	3	
4.0 to <6.0	2	
6.0 to 10.0	1	
>10.0	Not Allowed	

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5.3.5 Actinide Solutions in Plastic Bottles (continued)

Table 5.3.5-14, Vented Plastic Bottles in Vented Plastic Bagout Bags and Vented Drum Liner Bags (16 bottles/drum) (organic and/or colloidal suspensions)

Vented plastic bottles in vented plastic bagout bags and vented drum liner bags (16 bottles/drum) (organic and/or colloidal suspensions)		Configuration
Plutonium concentration (g/l)	Safe Storage Time (days)	Approved vented cap Double bagged bottle (vented) One or two liner bags (vented)
0.001 to <0.20	Not Limited	
0.20 to <0.25	365	
0.25 to <0.35	180	
0.35 to <0.5	48	
0.5 to <1.0	14	
1.0 to <2.0	6	
2.0 to <4.0	3	
4.0 to <6.0	2	
6.0 to 10.0	1	
>10.0	Not Allowed	

- 2 IF a drum contains more than 200 grams WG Pu (may be aged),
OR the bottles contain solutions that started as non-WG Pu (i.e., extracted americium solutions),

THEN:

[A] Tables 5.3.5-8 through 5.3.5-14 do not apply

[B] Contact FPE for the storage times for non-compliant drums

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5.3.6 Actinide Solution Placed Directly into 55-Gallon Drums

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Except where noted, all aqueous or organic solutions and/or colloidal suspensions described by these IDCs are subject to the requirements of this section, IDC 070, 200, 400, 401, 501, 503, 505, 508, 527, 529, 530, 533, 535, 541, and 599

NOTE *All of the drums referred to in this section are non-removable head, (bung drum) 55-gallon drums*

A. Aqueous solutions containing >0.001 grams/liter plutonium in solution

1 These solutions **SHALL not** be placed directly into 55-gallon drums

B. Aqueous solutions containing <0.001 grams/liter plutonium in solution

1 A minimum of six inches of headspace must be left between the solution and the drum lid

C. Organic solutions and/or colloidal suspensions containing >0.001 grams/liter plutonium in solution

1. These solutions **SHALL not** be placed directly into 55-gallon drums

D. Organic solutions and/or colloidal suspensions containing <0.001 grams/liter plutonium in solution

The table included in this section **SHALL** be used to determine the Safe Storage Times for organic and/or colloidal suspensions placed directly into 55-gallon drums

The storage times identified in this section are for 55-gallon drums with a minimum of six inches of headspace between the solution and/or colloidal suspension and the drum lid. The storage times assume a sealed drum.

Table 5.3.6-1, Non-Vented 55-Gallon Drum

Plutonium concentration (g/l)	Safe Storage Time (years)
<0 0001	Exempt from this procedure
0 0001 to <0 0005	6
0 0005 to 0 001	3
>0 001	Not Allowed

NOTE *Because of the potential for hydrogen accumulation in drums containing organic solutions, non-sparking tools **SHALL** be used when venting the drums and the drums **SHALL** be grounded during the venting operation.*

5.3.7 Tanks and Piping

Appendix 2, Flammable Gas Generating Tanks and Piping, contains a list of flammable gas generating tanks and piping that have been identified on plantsite

A The system **SHALL** be purged when

- The specified limits as identified in Section 5.1.1 have been exceeded, or
- An approved calculation indicates that the specified limits as identified in Section 5.1.1 have been exceeded, or
- It cannot be determined if the specified limits as identified in Section 5.1.1 have been exceeded (as soon as practical after discovery)

B. Purging **SHALL** adjust the mixture to within or below the specified limits as identified in Section 5.1.1 This action **SHALL** be confirmed by measurement

Exception Purging may be confirmed by verification of purge gas flow with instrumentation and approved calculation

C The purge gas **SHALL** be approved by FPE, or one of the following used

- Nitrogen
- Carbon Dioxide
- Air (as long as the system is not above the UFL)

D. Purge gas **SHALL** be introduced to the system at pressures less than the maximum allowable working pressure of the system

E **WHEN** mechanical tapping equipment must be employed on piping known, or predicted to contain, flammable gas in unknown concentrations or in concentrations above the LFL,
THEN approval **SHALL** be obtained from FPE and the SCE to prevent ignition of the gas and incorporated into an appropriate IWCP package

5.3.7 Tanks and Piping (continued)

- F Tapping rates **SHALL** be controlled per manufacturers instructions to avoid heat buildup on the working surface and the tool
- G. Any tank known or suspected to contain acidic aqueous actinide solutions must have a current calculation, based on the latest tank data on file, listing the predicted values for percent H₂ and TNT gram equivalent. These calculations will be used to determine the need for safety precautions. The most current concentration and volumetric data will be provided by the Facility Manager or designee to Engineering and will be used for these calculations
- H Before tapping a system, the pressure **SHALL** be reduced to atmospheric whenever possible
- I The room air space around systems as defined in Appendix 2, containing flammable gas **SHALL** be continuously monitored for flammable gas and IDLH value by Industrial Hygiene during breaching operations. Monitoring may occur in the glovebag when the breach is made inside of a glovebag, unless the system is under a continuous purge.
- J. Ventilation in the area of tanks or pipes listed in Appendix 2 **SHALL** be sufficient to prevent the accumulation of flammable gas above 25 % of the LFL and IDLH values by Industrial Hygiene. The calculation used to confirm the ventilation rate will be provided by a qualified engineer in accordance with 1-V51-COEM-DES-210, Site Engineering Process Procedure.

5.4 Removal of Drum Filter Caps

- A A banding and crimping tool may be used for the removal of drum filter caps providing it is done in accordance with the criteria in Appendix 6, Removal of Drum Filter Caps and Drum Lid-Retaining Bolts. Additionally, the cutting of a drum lid retaining bolt is addressed in Appendix 6

6. INSTRUCTIONS

6.1 Deviations

Employees

- [1] IF this procedure cannot be performed as written,
THEN

[A] Stop work and ensure that the as-left condition is safe, stable and secure

[B] Notify the responsible supervisor

Supervision/Management

- [2] IF a revision or deviation is necessary,
THEN notify and submit the requested change to FPE as soon as practicable in
accordance with Appendix 3

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- [3] Evaluate the requested revision or deviation(s) and respond in writing as follows
- [A] Evaluate the requested deviation and respond with approval or denial with
concurrence from the other appropriate organizations, such as the
cognizant Nuclear Safety organization, Safety and Industrial Hygiene,
Criticality Safety, Independent Safety Review and the cognizant authority
for Transportation Safety
- [B] IF the revision or deviation request is approved by FPE and the other
concurring organizations,
THEN process the requested change to this procedure in accordance with
MAN-001-SDRM, Site Documents Requirements Manual, if required

6.2 Newly Discovered Conditions

In the event that data is made available which indicates that container(s), package(s), tank(s), or piping that is/are within this procedure's scope, then immediately contact should be made to FPE for direction. FPE SME's, in conjunction with building or project personnel, will establish the safest and most effective approach for the mitigation of the identified and potential flammability hazards. Management of the newly discovered container or tank, consistent with FPE recommendations, shall constitute compliance with this procedure.

Facility Management

[1] IF a newly discovered item or area is determined or suspected to be regulated by this procedure,

THEN

[A] Determine the reporting requirements, as appropriate, in accordance with 1-D97-ADM-16 01, Occurrence Reporting Process

[B] Notify FPE and Occupational Safety as soon as practicable

NOTE *Appendix 3 should be used to document and process a newly discovered item*

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[2] Evaluate the notification and respond in writing as follows

[A] Determine the most efficient technique to minimize the hazard associated with the flammable gas

7 **RECORDS**

Records associated with the implementation of this procedure **SHALL** be maintained by the facility. Site records will be maintained by FPE.

8. REFERENCES

DOE-STD-3013-96, Criteria for Preparing and Packaging Plutonium Metals and Oxides for Long-Term Storage

Fire Protection Program Manual

NFPA 69, Explosion Prevention Systems

NFPA 70, National Electric Code

NFPA 77, Static Electricity

PRO-Q61-FILTER-001, Container Filter Testing

MAN-T91-STSM-001, Site Transportation Safety Manual

MAN-001-SDRM, Site Documents Requirements Manual

Occupational Safety and Industrial Hygiene Program Manual, Chapter 21

PRO-W89-HSP-31.11, Transfer and Storage of Plutonium for Fire Safety

Residue and TRU Waste Vent Filter Monitoring Plan

SM-145, Welding or Tapping on Equipment Containing Fluids

1-D97-ADM-16 01, Occurrence Reporting Process

1-M12-WO-4034, Solid Radioactive Waste Packaging Requirements

1-V51-COEM-DES-210, Site Engineering Process Procedure

3-X31-CAP-001, Corrective Action Process

CALC-000-FP-000700, Hydrogen Accumulation in 10 Gallon Drums

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HYDROGEN GENERATING IDCs

Fire Protection Engineering is the owner and custodian of this table. Only FPE may modify it in any way, and only in accordance with the requirements of the SDRM. This appendix contains the hydrogen generating potential for all available IDCs at Rocky Flats. Each IDC is divided into 5 categories depending on the hydrogen generation potential. The categories are as follows:

Category 1H- Material in this IDC presents a hydrogen generation problem because of the matrix composition

Category 2H- Material in this IDC can present a hydrogen generation problem because of absorbed moisture or if the material is stored in contact with plastic or other organic material. **NOTE 2H-** This material may be classified as Category 4H if the material has been properly stabilized and is not stored in contact with plastic or other organic material.

Category 3H- Material in this IDC can present a hydrogen generation problem if stored in contact with plastic or other organic materials. **NOTE 3H-** This material may be classified as Category 4H if the material is not stored in contact with plastic or other organic material, i.e., material stored in compliance with HSP-31.11.

Category 4H- Material in this IDC does not present a hydrogen generation problem because of the composition of the matrix or the small quantity of radioactive material.

Category 5H- Material in this IDC could not be assigned to any of the first four categories. Contact Fire Protection Engineering for guidance on this material.

NOTE 1 *The categories have been assigned based on conservative assumptions.
The categories may be modified by FPE based on the specific composition
of the material.*

NOTE 2 *For new IDCs that are not in this appendix FPE should be contacted for a
category determination.*

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
ADJ	GL ADJ NMC					X
CNV	IDC for conversion of COA					X
H35	Hanford Metal Buttons			Note 3H		
H61	Duct Holdup Material	X				
IPS	In Process Solid/Solution					X
U61	Pu/EU Oxide, Less than 10,000 ppm EU	X				

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
Y61	Pu/EU Oxide, Over 10,000 ppm EU	X				
Y61S	Pu/EU Oxide, Over 10,000 ppm EU Standard	X				
000	Empty Containers				X	
001	Aqueous Process Sludge	X				
002	Second Stage Sludge	X				
003	Organic Waste Mobilization	X				
007	Bypass Sludge-Bldg 374	X				
010	Metal Button, RF, Acceptable Purity			Note 3H		
011	Metal Buttons, Other, Acceptable Purity			Note 3H		
012	Metal of Acceptable Purity			Note 3H		
012S	Metal of Acceptable Purity-Standard			Note 3H		
013	Metal Buttons Awaiting Lab Analysis			Note 3H		
014	E/R Buttons-Spec			Note 3H		
015	Molten Salt Buttons, Acceptable Purity			Note 3H		
016	Leached Part V Metal-Spec.			Note 3H		
017	Non-Routine ER Metal, Unacceptable Purity			Note 3H		
018	NP			Note 3H		
019	DOR Buttons, Unacceptable Purity			Note 3H		
020	Non-Routine Metal, Unacceptable Purity			Note 3H		
021	Non-Routine Hydride	X				
024	LANL ER Metal Awaiting Analysis			Note 3H		
025	AL Alloyed Anode Heel for SRP			Note 3H		
026	Leached Part V Metal, Unacceptable Purity			Note 3H		
027	Anode Feed for E/R, Non-Routine Metal			Note 3H		
029	Anode Feed for E/R, DOR Rejects			Note 3H		
030	Metal Buttons, RFP, Non-Spec			Note 3H		
031	Anode Feed for E/R, Non-Spec			Note 3H		
032	Metal Buttons for Molten Salt Process			Note 3H		
033	Metal Buttons, Skin Turnings Molten Salt			Note 3H		

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DC-08	IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
	035	Metal Awaiting Disposition, Anal Complete			Note 3H		
	040	Turning Briquette	X				
	041	Solid Scrap Briquette			Note 3H		
DC-08	044	AM and Misc oxide	X				
	047	4 5% EU Oxide				X	
	050	Skulls			Note 3H		
	051	Anode Heel			Note 3H		
DC-08	052	Oxide Pyro RF	X				
	053	Hydroxide	X				
	054	Caustic Waste Treatment (CWT) Oxide	X				
	054H	High Level CW Oxide	X				
DC-08	057	Oxide Awaiting Spec Analysis	X				
	058	Oxide Awaiting Production Categorization	X				
	059S	Oxide Standard in Diatomaceous Earth	X				
	060	Oxide (Stabilized)	X				
DC-01	060C	Encapsulated Oxide-Ceramic	X				
	060S	Oxide Standard	X				
DC-08	061	Non-Spec Oxide	X				
	062	High Purity Oxide Heel	X				
	063	Hydrides	X				
	064	Machining Sludge (Unstabilized)	X				
DC-01	064T	Machining Sludge (Stabilized)	X				
DC-08	065	Oxide Heel in Small Stacker Cans	X				
	066	Uranium Metal for Crit Lab				X	
DC-08	067	Chlorinated Oxide	X				
DC-01	067C	Encapsulated Chlorinated Oxide	X				
	069	Roaster Oxide D-38				X	
	070	Nitrate Feed	X				
	073	Mixed IDCs Outside the PSZ					X
	080	Peroxide Cake (Includes Green Cake)	X				
	081	Impure Peroxide Cake (Includes Impure Green Cake)	X				
DC-08	082	Green Cake in Small Inner Can-Bldg 371	X				
	083	High Fired Oxide-DOR	X				
	084	Hanford Purex Oxide	X				
	086	Oxide E/R Scrape Out	X				
	087	Impure Green Cake in Small Inner Cans-Bldg 371	X				

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
089	Grease Oxide (Green Cake)	X				
090	Plutonium Tetrafluoride (PUF4)			Note 3H		
090C	Encapsulated Fluoride-Ceramic	X				
091	Non-Spec Fluoride		Note 2H			
092	Impure Fluoride Heel		Note 2H			
093	Sodium Fluoride Pellets		Note 2H			
097	Impure Fluoride in Small Inner Cans-Bldg 371		Note 2H			
099	Grease Fluoride	X				
100	Filtrate Recovery Nitrate Feed (Evaporator Bottom)	X				
140	Turnings (Acceptable for Briquetting)	X				
141	Fabrication Metal Fines			Note 3H		
142	Turnings (Unacceptable for Briquetting)	X				
145	Oxide-Failed First L O I Test	X				
146	Oxide-L O I Reject	X				
146S	Oxide-L O I Reject Standard	X				
1484	Uncontaminated Class Scrap Metal Shapes				X	
150	Solid Scrap or Free Metal, Recastable			Note 3H		
151	Free Metal, Fines Non-Spec			Note 3H		
152	Ingot Pieces Unacceptable Purity			Note 3H		
153	Solid Scrap Unacceptable Purity			Note 3H		
153S	Solid Scrap Unacceptable Purity-Standard			Note 3H		
154	E/R Scrape Out Material	X				
159	Screenings From Oxide	X				
160	Rejected Parts			Note 3H		
161	Scrap Part			Note 3H		
170	Semi-Fab Circles, Squares, Plate, Sheet			Note 3H		
171	Rods			Note 3H		
173	Semi-Fabricated Parts			Note 3H		
180	Finished Parts, New Production			Note 3H		
185	Parts From Retirements			Note 3H		
186	Unleached Part V Metal			Note 3H		
187	Unleached Metal Parts			Note 3H		
189	Recycled Binary Ingots			Note 3H		

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
190	Castings			Note 3H		
191	Ingots			Note 3H		
192	Feed Ingots			Note 3H		
193	TA Target and Sub-Target, Acceptable Purity			Note 3H		
195	Ingots of Unacceptable Purity			Note 3H		
196	Ingots Available for Blending			Note 3H		
197	TA Target and Sub-Target, to be Leached			Note 3H		
199	Shields			Note 3H		
200	Standards					X
201	Sealed Sources (Non-SNM S/B Attract. Level E)					X
210	Metal Samples, Acceptable Purity			Note 3H		
211	Retained Metal Samples			Note 3H		
212	Metal Samples, Unacceptable Purity			Note 3H		
213	Mounted Metal Samples, Unacceptable Purity			Note 3H		
250	PuSPS Alloyed Clean Metal $\geq 98\text{wt}\%$ Total Actinides			Note 3H		
251	PuSPS Unalloyed Clean Metal $\geq 98\text{wt}\%$ Total Actinides			Note 3H		
252	PuSPS Impure Metal $\geq 50\text{wt}\% < 98\text{wt}\%$ Total Actinides			Note 3H		
253	PuSPS Low Purity Metal $< 50\text{wt}\%$ Total Actinides			Note 3H		
254	PuSPS PuU Metal Alloys $> 50\text{wt}\%$ Total Actinides			Note 3H		
255	PuSPS Clean Oxide $\geq 85\text{wt}\%$ Total Actinides		Note 2H			
256	PuSPS Impure Oxide $\geq 30\text{wt}\% < 85\text{wt}\%$ Total Actinides		Note 2H			
257	PuSPS Low Purity Oxide $< 30\text{wt}\%$ Total Actinides		Note 2H			
258	PuSPS PuU Oxide $\geq 30\text{wt}\%$ Total Actinides		Note 2H			
259	PuSPS Chlorinated Oxides $> 10\text{wt}\%$ Total Actinides		Note 2H			
289	Low Purity Oxide Heel	X				
290	Filter Sludge	X				
292	Incinerator Sludge	X				
295	Sewer Sludge				X	
296	Compost Waste				X	

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
299	Miscellaneous Sludge	X				
299R	Misc Sludge - Repack	X				
300	Graphite Molds			Note 3H		
300H	Graphite Molds - Hold for Safeguards			Note 3H		
301	Classified Graphite Shapes			Note 3H		
301U	Formerly Classified Graphite Shapes			Note 3H		
302	Benelex and Plexiglas	X				
303	Scarfed Graphite Chunks			Note 3H		
310	Graphite Scarfings and Fines			Note 3H		
310S	Graphite Standard			Note 3H		
310P	Blended Graphite Fines			Note 3H		
311	Graphite Heels		Note 2H			
312	Graphite, Coarse			Note 3H		
312S	Coarse Graphite Standard			Note 3H		
317	Immobilized Solid Inorganic Waste				X	
318	Hydride-from TA Crucibles	X				
319	Oxide-from TA Crucibles	X				
320	Heavy Non-SS Metal		Note 2H			
320R	Heavy Non-SS Metal - Repack		Note 2H			
321	Lead				X	
323	Mixed IDCs Outside PA (Mixed Waste) Not D38					X
324	Mixed IDCs Outside PA (Hazardous Waste) Not D38					X
325	Mixed IDCs Outside PSZ (Mixed Waste)					X
326	Mixed IDCs, Low Level Waste Outside the PSZ/PA					X
327	Cemented Composite Chips				X	
328	Filters, Ful-Flo, From Incinerator	X				
330	Combustibles, Dry	X				
330R	Combustibles, Dry - Repack	X				
331	Filters, Ful-Flo Not from Incinerator	X				
331S	Ful-Flo Filter Standard	X				
332	Only Sludge	X				
333	Calcium Metal		Note 2H			

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
334	Blanket, Fire	X				
334R	Blanket, Fire - Repack	X				
335	Absolute Drybox Filters, Not Acid Contaminated	X				
335R	Absolute Drybox Filters, Not Acid Contaminated - Repack	X				
336	Combustibles, Wet	X				
336H	Combustibles, Wet - Hold for Safeguards	X				
336R	Combustibles, Wet - Repack	X				
337	Plastic	X				
337H	Plastic (Teflon, PVC, Poly, Etc) - Hold for Safeguards	X				
337R	Plastic - Repack	X				
338	Filter Media	X				
338S	Insulation Standard	X				
339	Leaded Drybox Gloves, Not Acid Contaminated	X				
340	Sludge from Size Reduction Area	X				
341	Leaded Drybox Gloves, Acid Contaminated	X				
342	Absolute Drybox Filters, Acid Contaminated	X				
342R	Absolute Drybox Filters, Acid Contaminated - Repack	X				
344	Dry Calcium Oxide				X	
350	Immobilized Organic Solid Waste	X				
360	Al Oxide Ceramic Crucibles		Note 2H			
363	Electrorefining Salt-First Use		Note 2H			
364	Electrorefining Salt-Second Use		Note 2H			
365	Salt from Bad DOR Run		Note 2H			
368	MG Oxide Crucibles-Not LECO		Note 2H			
368S	MG Oxide Crucible Standard		Note 2H			
369	LECO Heel		Note 2H			
370	LECO Crucibles			Note 3H		
371	Fire Brick			Note 3H		
372	Grit		Note 2H			
373	Fire Brick Heel		Note 2H			
374	Blacktop, Concrete, Dirt, and Sand	X				

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
374R	Blacktop, Concrete, Dirt, and Sand - Repack	X				
375	Oil Dry	X				
376	Processed Filter Media	X				
377	Fire Brick, Coarse			Note 3H		
378	Fire Brick, Pulverized or Fines			Note 3H		
379	Fire Brick, Scarfed			Note 3H		
387	Reburned SS&C Sweepings	X				
387P	Grounded/Blended Reburned SS&C Sweepings	X				
390	Unpulverized Slag	X				
390P	Ground/Blended Slag	X				
391	Unpulverized Sand and Crucible	X				
391P	Ground/Blended Sand and Crucible	X				
392	Unpulverized Sand, Slag and Crucible	X				
392S	Unpulverized Sand, Slag and Crucible Standard	X				
392P	Ground/Blended Sand, Slag and Crucible	X				
392R	Unpulverized SS&C Repack/Processed	X				
393	Sand, Slag and Crucible Heel	X				
393S	SS&C Heel Standard	X				
393P	Ground/Blended Sand, Slag and Crucible Heel	X				
393R	SS&C Heel Repack/Processed	X				
394	Magnesium Oxide Sand	X				
394P	Ground/Blended Magnesium Oxide Sand	X				
395	Unpulverized Slag and Crucible	X				
395P	Ground/Blended Slag and Crucible	X				
396	Pulverized Slag	X				
396P	Ground/Blended Slag	X				
397	Pulverized Sand and Crucible	X				
398	Pulverized Sand, Slag and Crucible	X				
398S	Pulverized Sand, Slag and Crucible Standard	X				
398P	Ground/Blended Sand, Slag and Crucible	X				
398R	Pulverized SS&C Repack/Processed	X				
399	Pulverized Slag and Crucible	X				
400	Ion Column Feed < 5 g/l Pu	X				
401	Ion Column Feed > 5 g/l Pu	X				
402	Solvent Extraction Feed	X				

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
403	Solvent Extraction Product	X				
404	Molten Salt, CA, ZN, K		Note 2H			
405	Molten Salt, Unknown % Unpulverized		Note 2H			
406	Molten Salt, Unknown % Unpulverized		Note 2H			
407	Molten Salt, 8% Unpulverized		Note 2H			
408	Molten Salt, 8% Pulverized		Note 2H			
409	Molten Salt, 30% Unpulverized		Note 2H			
409S	Molten Salt, 30% Unpulverized Standard		Note 2H			
410	Molten Salt, 30% Pulverized		Note 2H			
411	Electrorefining Salt-Final Disposition		Note 2H			
411R	Electrorefining Salt-Repack		Note 2H			
411S	ER Salt Standard		Note 2H			
411X	ER Salts TRU Waste		Note 2H			
412	Gibson Salt		Note 2H			
413	Impure Salt from Cell Cleanout		Note 2H			
414	Direct Oxide Reduction Salt- Unoxidized CA		Note 2H			
414S	Direct Oxide Reduction Salt Standard		Note 2H			
415	Plutonium Chloride Mixed Salt		Note 2H			
416	Zinc-Magnesium Alloy Metal		Note 2H			
417	Dicesium Hexachloroplutonate Salt (DCHP)			Note 3H		
417S	DCHP Salt Standard			Note 3H		
418	Molten Salt Packaged for LANL		Note 2H			
419	Unpulverized Incinerator Ash	X				
420	Pulverized Incinerator Ash	X				
420F	Ash and Debris from 1969 Fire	X				
420P	Blended Pulverized Incinerator Ash	X				
420S	Pulverized Incinerator Ash Standard	X				
421	Ash Heel	X				
421S	Ash Heel Standard	X				
422	Soot	X				
423	Soot Heels	X				

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
424	Immobilized Inorganic With Residual Organic Waste	X				
425	Fluid-Bed Ash				X	
426	Returned IDC 413		Note 2H			
427	MSE Spent Dicesium Salt		Note 2H			
428	Ash Selected for MMEC	X				
429	Scrub Alloy Spent Salt		Note 2H			
429R	MSE and Scrub Alloy Spent Salt Repack		Note 2H			
429X	MSE and Scrub Alloy Spent Salt TRU Waste		Note 2H			
430	Resin, Unleached	X				
431	Resin, Leached	X				
433	Scrub Alloy Spent Dicesium Salt		Note 2H			
433R	Scrub Alloy Spent Dicesium Salt CACL2 Salt Repack		Note 2H			
433X	Scrub Alloy Spent Dicesium Salt CACL2 Salt TRU		Note 2H			
434	Free Calcium Containing Spent Salt		Note 2H			
435	CE/CA Scrub Alloy Spent Salt		Note 2H			
436	Miscellaneous Salt Waste		Note 2H			
436R	Miscellaneous Salt Waste-Repack		Note 2H			
438	Insulation	X				
438H	Insulation - Hold for Safeguards	X				
438R	Insulation	X				
440	Glass	X				
440R	Glass - Repack	X				
441	Unleached Raschig Rings Only	X				
442	Leached Raschig Rings	X				
443	Raschig Rings, Solvent Contaminated	X				
444	Ground/Leaded Glass				X	
444R	Ground/Leaded Glass - Repack				X	
454	Direct Oxide Reduction Salt-Oxidized CA		Note 2H			
454S	Direct Oxide Reduction Salt-Oxidized CA Standard		Note 2H			

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
454R	Direct Oxide Reduction Salt CACL2 Salt Repack		Note 2H			
454X	Direct Oxide Reduction Salt CACL2 Salt TRU Waste		Note 2H			
470	Molten Salt Selected for MMEC		Note 2H			
472	Electrorefined Salt Selected for MMEC		Note 2H			
473	Electrorefined Salt Packaged for LANL		Note 2H			
479	Empty Reusable Cans in a White Drum				X	
480	Light Metal	X				
480H	Light Metal - Hold for Safeguards	X				
480R	Light Metal	X				
481	Light Non-SS Metal (FE, CU, AL, SS) Prep for Leach				X	
483	Scrap D-38 Metal (Unclassified)				X	
484	Class Non-NM Scrap Metal Shapes-Non BE			Note 3H		
485	Scrap D-38 Classified Shapes				X	
486	Classified Tooling for Disposal				X	
487	Classified Plastic Shapes	X				
488	Glovebox Parts with Lead				X	
489	Classified BE Scrap Metal Shapes			Note 3H		
490	HEPA Filters (24X24), Not Acid Contaminated	X				
491	PreFilter	X				
491R	PreFilter - Repack	X				
492	HEPA Filters (24X24), Acid Contaminated	X				
500	Enriched Uranium Special Solution (Non-conforming)	X				
501	Ion Column Effluent	X				
502	HNO3 Distillate	X				
503	Miscellaneous Acid Waste Solution Ph = or <2	X				
504	Uranium Solution for Cnt Lab				X	
505	Misc Neutral Waste Solution Ph >2 but <12.5	X				
508	Acid Chloride Waste	X				
509	Acid Chloride Solution Standard	X				

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
513	Steam Condensate and/or Cooling Water	X				
519	Steam (H2O) Containing SS Material	X				
523	Miscellaneous Organic Solids	X				
527	Miscellaneous Basic Waste Solution Ph = or >12.5	X				
528	Caustic Scrubs and/or Filtrates	X				
529	Miscellaneous Organic Liquid/Solution	X				
530	Miscellaneous Aqueous/Organic Liquid Mixture	X				
531	Miscellaneous Organic Sludge	X				
532	Miscellaneous Inorganic Solids					X
533	Organics-Disc Level-Cool Oil-Car Tet-Perchlor Etc	X				
535	Organics Solution (Lab Quantities)	X				
536	Cemented Inorganics	X				
537	Cemented Organics	X				
538	Cemented Inorganics With Residual Organics	X				
541	Analytical Lab Solution	X				
544	Excess Chemicals-Liquid				X	
545	Excess Chemicals-Solid				X	
559	Inorganic Sludge/Salt Waste From the B559 Lab	X				
599	N O L Solutions	X				
600	Al Mg Metal Alloy			Note 3H		
601	Al Mg Oxide	X				
602	Scrub Alloy Metal (Dicesium)			Note 3H		
603	CE/CA Alloy Metal			Note 3H		
604	GA/CA Alloy Metal			Note 3H		
620	AL Alloy Metal			Note 3H		
649	Cut Up Metal Feed for PU/NP			Note 3H		
650	ER Button from PU/NP			Note 3H		
651	Anode Heel from PU/NP			Note 3H		
653	Oxide from PU/NP	X				
654	ER Salt from PU/NP		Note 2H			
655	ER Ceramics from PU/NP		Note 2H			
702	Sludge W/Wash Water	X				

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
710	Heavy Water (D20)				X	
720	Gas (D2, HD, H2S)	X				
730	Deuterated Organic Compounds	X				
777	Empty waste Box (Crate)				X	
800	Solidified Sludge/Aqueous Waste-Bldg 774	X				
801	Solidified Organics-Bldg 774	X				
802	Solidified Lab Waste-Bldg 774	X				
803	Solidified Sludge-Bldg 374	X				
804	Saltcrete	X				
805	Pondcrete	X				
806	Solidified Process Solids	X				
807	Solidified Bypass Sludge-Bldg 374	X				
808	Mixed Solidified Lab Organics-Bldg 774	X				
809	Cemented Resin	X				
810	Building 374 Polysalt					X
812	Granulated Type Filter Media				X	
813	RCRA Regulated Sludge-LL Mixed Haz. Waste				X	
814	Filter Socks-LL Mixed Haz. Waste				X	
815	Cemented Insulation and Filter Media	X				
816	Polymerized Organics-Small Containers	X				
817	Dry Salt-Low Level				X	
821	Combustibles Dry TRU Waste	X				
822	Combustibles Wet TRU Waste	X				
822X	Stabilized, Neutralized, Dry Combustible TRU	X				
823	Cemented Miscellaneous Sludge	X				
824	Light Metal TRU Waste				X	
825	Plastic TRU Waste	X				
826	Infrared Crystals and Assemblies					X
827	Polymerized Organic-Drum	X				
828	Polymerized Aqueous-Drum	X				
829	Polymerized Aqueous-Small Cans	X				
831	Comb Dry TRU Mixed Waste (NMC, NDA, Non-PSZ)	X				
832	Comb Wet TRU Mixed Waste (NMC, NDA, Non-PSZ)	X				
832X	Stabilized, Neutralized, Dry Combustible RCRA	X				

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
833	Plastic TRU Mixed Waste (NMC, NDA, Non-PSZ)	X				
850	Macroencap LL Mixed Waste				X	
851	Comb Dry LL Mixed Waste (NMC, NDA, Non-PSZ)				X	
851R	Comb Dry LL Waste(NMC,NDA,NON-PSZ) - Repack				X	
852	Comb Wet LL Mixed Waste (NMC, NDA, Non-PSZ)				X	
852R	Comb Wet LL Waste (NMC,NDA,NON-PSZ) - Repack				X	
853	Plastic LL Mixed Waste (NMC, NDA, Non-PSZ)				X	
853R	Plastic LL Waste (NMC,NDA,NON-PSZ) - Repack				X	
854	Beryllium Metal				X	
855	Ground Glass				X	
856	Raschig Rings, Solvent Contaminated	X				
857	Vitrified Sludge-Bldg 774				X	
858	Ground/Surface Water				X	
859	Repackaged LECO Crucibles in Metal Cans				X	
860	WIPP Experimental Waste (Mixed IDCs)					X
860R	WIPP Experimental Waste (Mixed IDCs)-Repack					X
861	Comb Dry LL Waste (NMC, NDA, Non-PSZ)				X	
861R	Comb Dry LL Waste (NMC, NDA, Non-PSZ) - Repack				X	
862	Comb Wet LL Waste (NMC, NDA, Non-PSZ)				X	
862R	Comb Wet LL Waste (NMC, NDA, Non-PSZ) - Repack				X	
863	Plastic LL Waste (NMC, NDA, Non-PSZ)				X	
863R	Plastic LL Waste (NMC, NDA, Non-PSZ) - Repack				X	
864	Medical/Infectious Waste				X	
869	U-238 (D-38) Oxide LL Waste				X	
870	Beryllium Fines				X	
871	Titanium Turnings				X	
880	Solid Excess Chemicals-Oxidizer				X	

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
881	Solid Excess Chemicals-Cyanide or Sulfide				X	
882	Solid Excess Chemicals-Reactive				X	
883	Solid Excess Chemicals-Organic				X	
884	Solid Excess Expired Chemicals-Acids				X	
885	Solid Excess Expired Chemicals-Base				X	
886	Solid Excess Expired Chemicals-Non-Specific Inorganic				X	
888	Empty Open Top 55 gallon White Drum				X	
890	Liquid Excess Expired Chemicals-Acid				X	
891	Liquid Excess Expired Chemicals-Basic				X	
892	Liquid Excess Expired Chemicals-Organic				X	
893	Liquid Excess Expired Chemicals-Alcohol/Water				X	
894	Liquid Excess Expired Chemicals-Poisons				X	
910	DOE Acceptable Assemblies			Note 3H		
911	Surveillance Units			Note 3H		
912	Scrap EU Parts in Shipping Cont				X	
913	Non-WR Assemblies				X	
914	Retirement Assemblies			Note 3H		
915	WR Sub-Assemblies			Note 3H		
970	LL TSCA Waste-PCB Liquids				X	
971	LL TSCA Waste-PCB Fluorescent Light Ballast				X	
972	LL TSCA Waste-Misc PCB Debris				X	
973	LL TSCA Waste-PCB/Transformers/Capacitors				X	
998	NMC for Discard of OY Drums after Approval				X	
999	NMC Use Only					X
2000	Supr Compac Dry LLW Paper and Plastic (861 and 863)				X	
2116	Supr Compac TRU-Mix Compost Waste (831, 832, 833)				X	
2117	Supr Compac TRU-Mix Lite Metal Waste (480)				X	

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IDC #	Description	Category 1H	Category 2H	Category 3H	Category 4H	Category 5H
2118	Supr Compac TRU-Mix Glass Waste (444)				X	
2119	Supr Compac TRU-Mix Filter Waste (335, 376, 490, 491)				X	
2216	Supr Compac TRU Compost Waste (821, 822, 825)	X				
2216R	Supr Compac TRU Compost Waste (821, 822, 825) - Repack	X				
2218	Supr Compac TRU Glass Waste (440,442)				X	
2219	Supr Compac TRU Process Filter Media				X	
3001	Trucon Waste				X	
3002	Sandia Mix #1 Waste	X				
3003	Sandia Mix #2 Waste	X				
3004	Sandia Mix #3 Waste	X				
3010	Composite Debris 1-10% Organic	X				
3011	Composite Debris 10% Organic	X				
5001	Surface Contaminated Objects (SCO) for Disposal				X	

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APPENDIX 2

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FLAMMABLE GAS GENERATING TANKS AND PIPING

As part of the 1995-1997 Combustible Gas Program, a review of tanks and piping occurred. The following tanks and piping were identified as flammable gas generators

Building 371 Tanks

D-2401A, D-2401B, D-2401C (when solutions are present)

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Building 707 Tanks

C-Pit tanks

Drains, piping, and transfer lines (2) to Building 777

If the systems listed in this Appendix are removed during either deactivation or decommissioning activities, this procedure's requirements are subsequently waived and the removed system may be processed for disposal

APPENDIX 3

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**HSP-31.11/31.15 DEVIATION/NEWLY DISCOVERED CONDITION
ACKNOWLEDGEMENT FORM**

HSP-31.11/31 15 DEVIATION/NEWLY DISCOVERED CONDITION ACKNOWLEDGEMENT FORM				
Building	Location	Date	Time	Page 1 of 2
Contact	Ext	FAX	Pager	
Type of Notification <input type="checkbox"/> Deviation <input type="checkbox"/> Newly Discovered Condition Safety Evaluation Screen initiated? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Deviation/Newly Discovered Condition from Section(s)				
Applicable Authorization Basis Section(s)				
Proposed Alternative/Plan to achieve compliance				
Technical Basis				
Compensatory Measure(s)				
FPE Approval		Date		
CCA Review		Date and Time		

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HSP-31.11/31 15 DEVIATION/NEWLY DISCOVERED CONDITION ACKNOWLEDGEMENT FORM

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Building	Location	Date	Time	Page 2 of 2

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APPENDIX 4

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Rocky Flats
Environmental Technology Site

Residue and TRU Waste Vent Filter Monitoring
Plan
Revision 0

DC 04

Approved by /S/ G A O'Leary Date 4-2-02
G A O'Leary, TRU Waste Project Manager, Kaiser-Hill

Reviewed for Classification/UCNI

By /S/ William V Conner U/NU

Date 4/2/02

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6 2	Repackaged (RP) Monitoring	7
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Residue and TRU Waste Vent Filter Monitoring Plan

Executive Summary

This Vent Filter Monitoring Plan (Plan) provides the safety-related monitoring requirements for the residues and TRU waste stored at the Rocky Flats Environmental Technology Site (RFETS) prior to their disposition to WIPP. The original vent filter monitoring plan was based on the recommendations from Los Alamos National Laboratory report LA-UR-99-1076, as well as data from the Residue Characterization Program and two years of Prestabilization Monitoring Plan (PMP) data. This current plan is based on four years of data from residue drum vent filter monitoring and three years of data from TRU waste drum vent filter monitoring. The monitoring required is verification of the operability of the drum filters, and where applicable, pipe component and interior container filters and standard waste box filters.

RFETS has three distinct populations of drums from a monitoring perspective: residues in their original packaging (OP), not yet certified for permanent disposition, residues that have been repackaged (RP) and are ready to be certified to meet Waste Isolation Pilot Plant Waste Acceptance Criteria (WIPP WAC) and Interim Safe Storage Criteria (ISSC), and legacy TRU waste. Within these three populations there are drums that have had failed filters and drums that have not had failed filters. The Plan places drums which have had failed filters into test populations (TP) and drums which have not had failed filters are placed into monitoring groups (MG). The filters on TP drums are tested on a quarterly or annual basis, depending upon the number of failed filters that have been found on the drums. A statistical sample of the MG drums is selected each year for filter testing. The number of drums selected from a monitoring group is based upon the prevalence of failed filters found in the past on drums containing similar material. In this Plan, the TRU waste drums have been combined with repackaged residue drums for sample selection and filter testing.

This Plan contains provisions for testing filters on standard waste boxes. This is the first time standard waste boxes have been included in a vent filter monitoring plan. The standard waste boxes selected contain materials like those that have been associated with filter failures on drums.

Background

The first drum vent filter monitoring plan was written before the start of residue repackaging operations. This first plan was titled the Prestabilization Monitoring Plan (PMP). For this plan, the residue drums were divided into monitoring levels based upon the potential for hydrogen generation and generation of corrosive gasses. Testing of drum vent filters under the PMP was started in the summer of 1997. For the PMP, a failed filter was defined as a plugged filter (0 cc/min airflow through the filter). After two years of filter testing, the PMP was replaced by the Residue Vent Filter Monitoring Plan. For this plan, the residue drums were divided into original packaging (OP) and repackaged (RP) populations and the OP and RP populations were divided into monitoring groups (MG). The division of the residue material types into monitoring groups was based upon the results of two years of filter test data from the PMP, in addition to data that was generated from the Residue Characterization Program. The definition of a failed filter was expanded for this plan to include high-flow (>400 cc/min airflow through the filter) and low-flow (<100 cc/min airflow through the filter). During 1999, a plan was written to begin testing TRU waste legacy drums. The Filter Test Plan for Legacy Transuranic (TRU) Waste Forms was based largely on the data obtained from the PMP. This TRU waste monitoring plan was updated for FY 2000 and FY 2001.

Residue and TRU Waste Vent Filter Monitoring Plan

1 Objective

This Residue and TRU Waste Vent Filter Monitoring Plan (Plan) sets forth the management program for monitoring the residues and TRU waste in the inventory backlog at the Rocky Flats Environmental Technology Site (RFETS). Residues will be monitored both before and after they are repackaged to meet the Waste Isolation Pilot Plant Waste Acceptance Criteria (WIPP WAC) and/or the Interim Safe Storage Criteria (ISSC).¹ Legacy TRU waste will be monitored until it is certified to meet the WIPP WAC and shipped to WIPP. The objective of the Residue and TRU Waste Vent Filter Monitoring Program is to ensure safe storage of the residues and TRU waste until shipped for disposal at WIPP.

2 Scope

This program is designed to monitor solid residues and TRU waste stored in drums and standard waste boxes (SWBs) at RFETS to ensure that they are safely stored until they are shipped to WIPP. Materials stored in the stacker/retriever and other vaults are excluded from this program because they are already under an adequate monitoring program.²

There are two distinct populations of residue drums from a monitoring perspective: those in their original packaging (OP) and not yet certified for permanent disposition, and those that have been repackaged (RP) and are ready to be certified to meet WIPP WAC and ISSC. The monitoring requirements for each population are different given the relative packaging conditions between the two populations. Upon completion of the Residue project (May 2002), all residue drums are required to meet ISSC. The residue drum population will be monitored as described in this plan until the drums are shipped to WIPP. The TRU waste drum population, both legacy and newly generated, will also be monitored until the drums are shipped to WIPP. Selected SWBs will be monitored as described in this plan until they are shipped to WIPP.

3 Roles and Responsibilities

The work necessary to complete this monitoring plan is divided between three groups: the Technical Review Team, the Filter Test Team, and the Building Managers. The roles with respect to accomplishing this plan are summarized below.

The Technical Review Team is composed of members from organizations that are affected by the monitoring program. The Technical Review Team leader may request additional personnel with specific expertise to assist as needed. The Technical Review Team is responsible for collecting and analyzing data on drum and SWB filter failures, along with any other information affecting safe drum storage. The Technical Review Team shall:

- Review and approve procedures developed by the Filter Test Team
- Act as subject matter experts to recommend solutions and ensure worker safety
- Identify and segregate problem populations from the larger monitoring groups to minimize the impact of increased monitoring

¹ "Criteria for Interim Safe Storage of Plutonium Bearing Solid Materials" (Addendum to the DOE Implementation Plan for DNFSB Recommendation 94-1, issued January 25, 1996)

² Nuclear Materials Inventory Program Management Plan, RFETS 4-63 100-Plan-Inv-001 Rev 2 (Effective Date April 15, 1996)

- Verify compliance with the criteria set forth in this plan
- Determine and document any changes to this monitoring plan
- Identify whether additional monitoring is needed to address any safety concerns raised in this monitoring plan or any other efforts the site conducts that may have a bearing on residue and TRU waste safe storage, and communicate concerns to K-H management
- Review and discuss any other issues or concerns related to this monitoring program
- Determine whether mitigation is needed to assure safe storage of the residues or TRU waste pending repackaging

The Filter Test Team is responsible for testing drum and SWB filters, as well as communicating this information to appropriate building managers and the Technical Review Team. The Filter Test Team is composed of the Vent Filter Monitoring Project Manager, the Filter Test Supervisor, and Filter Test Operators. The Filter Test Team shall

- Develop test procedures and equipment
- Maintain and calibrate test equipment
- Train and certify operators per RFETS training requirements
- Document the results of the filter inspections
- Notify building management in writing when a filter has failed and provide a copy of this notification to the Technical Review Team leader
- Receive the harvested filters and data pertinent to its change-out (original filter type, change-out date, replacement filter type) from building management
- Filter Test Supervisor will store the harvested filters for possible subsequent analysis
- Provide all available information on the failed filters to the Technical Review Team leader
- Maintain documentation, records and database for the residue and TRU waste vent filter monitoring program

Building managers are responsible for ensuring safe residue and TRU waste drum and SWB storage within their facilities, including changing filters and shall

- Respond to requests for filter replacement as required by HSP 31 15
- Ensure that filters are replaced, and that the Filter Test and Inspection Deficiency Report is completed and transmitted to the Vent Filter Monitoring Project Manager
- Ensure that a radiological survey is performed and documented on failed filters, and that the failed filters are placed in labelled bags (container number, IDC, and date of removal) and made available to the Filter Test Supervisor

3.1 Documentation

A database will be maintained to gather relevant information collected from the monitoring program. It will include IDC type, unique package identification, data from the monitoring of drum, SWB and internal container vent filters, and any other ancillary characterization data (i.e. drum condition) collected during the vent filter inspection. Other information contained in the database will include test dates, test results, retest results, filter type, and filter condition. Any drums with failed vent filters will be flagged for future quarterly or annual inspections.

4 Derivation of Monitoring Levels

The Residue Vent Filter Monitoring program has been in progress for four years and the TRU waste drum vent filter monitoring program has been in progress for three years. A comprehensive review of the data from these two programs revealed that the drum vent filter failures are generally concentrated in a small portion of the drum population. Monitoring levels for the various drum populations were developed by concentrating the vent filter monitoring efforts on drums that have exhibited vent filter failures.

In populations that have shown elevated drum vent filter failure problems (i.e. IDCs 330, 331 and 336), the monitoring efforts were concentrated on the drums with vent filter failures and reduced for drums with no vent filter failures. Drum populations with no history of filter failures were eliminated from the program. A lack of filter failures coupled with characterization data that showed an absence of compounds causing filter corrosion provides reasonable assurance that filter failures would not occur in the future. The residue and TRU waste monitoring programs were combined into one program, because many repackaged residue drums are being assigned TRU waste IDCs and it is becoming more difficult to separate drums containing the two waste types.

Drums with a history of one or more vent filter failures were placed in Test Populations (TP) and drums with a test history of no vent filter failures were placed in monitoring groups (MGs). Filters on all TP drums are tested on a quarterly or annual basis. A statistical sample of drums in MGs are tested on an annual basis and overpack drums are included in the MGs. Newly repackaged drums and drums which have recently had a headspace gas sample taken will not be tested until six months have passed since generation of the drum or taking of the headspace sample. Drums containing less than 10 g of plutonium will be eliminated from the MG populations because of the reduced hydrogen generation potential described below. The americium content of the drum will also be evaluated in determining the <10 g drums. The equivalent plutonium content of the drums will be determined by adding the americium content times 66 to the plutonium content. Computer modelling calculations have shown that most drums containing the equivalent of <10 g of plutonium will not generate sufficient hydrogen to present a safety problem. Drums containing sludge and glass are exempt from the <10 g rule. The hydrogen generation rate from drums containing sludge and sludge coated glass is significantly higher than the hydrogen generation rate from drums containing other types of material.

Residues in drums with the original packaging (OP) were placed in MGs separate from repackaged (RP) residues and TRU waste drum MGs. If monitoring shows that a drum has been assigned to the wrong category, it will be moved to, and undergo the monitoring required for, the appropriate category. The MGs have been designed to be as large as possible to take advantage of the hypergeometric sampling statistics, which minimizes the number of required samples, particularly when no failed filters are found. The sampling confidence level goals described in the following paragraphs are expressed in the form "xx/yy", where "xx" is the percent confidence and "yy" is the percent for which we have assurance that the true proportion of failed filters is less than. Thus, a 95/5 confidence level goal implies that, assuming the test conditions are met, we have 95 percent confidence that the true proportion of failures in the MG population is less than 5 percent. By extension, a 100/0 confidence goal implies 100 percent sampling of all TP drums during the test cycle.

The TP drum populations are shown in Table 1. TP 1 is composed of drums involved in special studies and residue drums that have experienced repeated filter failures. The special studies currently in progress are the base coated granulated activated carbon (GAC-B) study and the Hastelloy filter study. Both of these studies are aimed at developing techniques for extending the life of drum vent filters. TP 2 consists of residue drums that have experienced only one filter failure since the drum vent filter monitoring program was started. TP 3 contains RP daughter drums from OP residue drums with repeat filter failures. TP 4 consists of RP daughter drums from OP residue drums with single filter failures and TRU waste drums with filter failures.

Table 1 Test Populations

Test Population (TP)	Population Description	Inspection Frequency	Confidence Level Goal
1	Special Study ¹ drums and residue drums with repeat filter failures	quarter	100/0
2	Residue drums with single filter failure	annual	100/0
3	Repackaged daughter drums from residue drums with repeat filter failures	quarter	100/0
4	Repackaged daughter drums from residue drums with single filter failure and TRU waste drums with filter failures	annual	100/0

¹ Special Studies currently in progress are the GAC-B and Hastelloy filter studies

MG OP 1 is composed of Ful-Flo filters (IDC 331G) and wet combustibles (IDC 336G) contaminated with organic solvents (drums that bear F-codes). MG OP 2 is composed of dry combustibles (IDC 330) from aqueous processes and organic contaminated dry combustibles (IDC 330G). MG OP 3 is composed of Ful-Flo filters (IDC 331) and wet combustibles (IDC 336) from aqueous processes. MGs OP 1, 2 and 3 will be combined for sample selection and will be sampled to a 95/5 confidence level goal. MG OP 4 is composed of sludge (IDCs 290, 291, 292, 299, 332, and 340) and glass (IDCs 440, 441 and 442). MG OP 4 will be sampled to an 80/15 confidence level goal. MG OP 5 is composed of HEPA filters (IDC 335, 342 and 490), filter media (IDCs 338 and 376), plastic (IDC 337), and insulation (IDC 438). MG OP 5 will also be sampled to an 80/15 confidence level goal. A higher confidence level goal is being used for MGs OP 1, 2 and 3 because most of the failed filters have been found on drums containing IDCs from these MGs and drums in these MGs are most likely to exhibit new failures. A lower confidence level goal is being used for MG OP 4 and 5 because only a few failed filters have been found on drums containing IDCs in these MGs and drums in these IDCs are less likely to produce new failures. All of the original packaging monitoring groups are summarized in Table 2.

Table 2. Original Packaging (OP) Residue Monitoring Groups

Monitoring Group (MG)	Residue IDCs*	Inspection Frequency	Confidence Level Goal
1	331G, 336G	annual	95/5
2	330, 330G		
3	331, 336		
4	290, 291, 292, 299, 332, 340, 440, 441, 442	annual	80/ 5
5	335, 338, 342, 376, 490, 337, 438	annual	80/15

* Only OP residues stored in drums and overpacks are covered by this plan

The RP monitoring groups are somewhat different from the OP monitoring groups. During the repackaging operation, no attempt is made to segregate dry combustibles (IDC 330), wet combustibles (IDC 336) and plastic (IDC 337). Thus, all three types of material could be included in a drum. The IDC assigned to the RP drum is based upon the operators' estimate of which material makes up the majority of the drum. Also, many RP drums are being assigned TRU waste IDCs after the drums are assayed. Because of this, most of the residue and TRU waste IDCs have been combined for the RP monitoring groups.

MG RP 1 consists of dry combustibles (IDCs 330G and 831), Ful-Flo filters (IDC 331G), wet combustibles (IDCs 336G and 832), and plastic (IDCs 337G and 833) contaminated with organic solvents (drums that bear F-codes). MG RP 2 consists of dry combustibles (IDCs 330 and 821), Ful-Flo filters (IDC 331), wet combustibles (IDCs 336 and 822), and plastic (IDCs 337 and 825) generated from aqueous processes. MG RP 1 and 2 are combined for sample selection and will be sampled to a 95/5 confidence level goal. MG RP 3 consists of sludge IDCs (IDCs 290, 291, 292, 299, 332, and 340). MG RP 3 will be sampled to an 80/15 confidence level goal. MG RP 4 consists of HEPA filters (IDCs 335, 342 and 490), filter media (IDCs 338 and 376) and insulation (IDC 438). MG RP 4 will also be sampled to an 80/15 confidence level goal. MG RP 5 contains glass (IDCs 440, 441, and 442) and this MG will be sampled to an 80/15 confidence level goal. One additional monitoring group is included with the RP monitoring groups. MG 0 consists of TRU waste sludge (IDCs 001, 002, 003, 800, 801, and 802). A few failed filters have been found on drums containing these IDCs and this MG will be sampled to a 95/10 confidence level goal. The RP monitoring groups are summarized in Table 3.

Table 3. Repackaged (RP) Residue Plus TRU Waste Monitoring Groups

Monitoring Group (MG)	Residue IDCs*	Inspection Frequency	Confidence Level Goal
RP 1	330G, 831, 331G, 336G, 832, 337G, 833	annual	95/5
RP 2	330, 821, 331, 336, 822, 337, 825		
RP 3	290, 291, 292, 299, 332, 340	annual	80/15
RP 4	335, 338, 342, 376, 438, 490	annual	80/15
RP 5	440, 441, 442	annual	80/15
MG 0	001, 002, 003, 800, 801, 802	annual	95/10

* Only RP residues and TRU waste stored in drums and overpacks are covered by this plan

If a failed filter is detected in any of the MGs in Tables 2 or 3, the associated drum will be moved to the appropriate test population. If multiple failed filters are found in any of the MGs, the Technical Review Team will evaluate the failure trends and identify any subpopulations that should be segregated for increased monitoring, thereby minimizing the monitoring impact on the larger, "parent" MG. If a subpopulation cannot be identified, the number of drums tested in the MG will be increased, to account for the increased incidence of failures.

Filters on SWBs have not been monitored under any of the previous vent filter monitoring plans. However, recently completed computer modelling calculations have shown that hazardous quantities of hydrogen can accumulate in certain SWBs if both vent filters fail closed. Some of the SWBs contain the types of materials that have been associated with vent filter failures on drums. Several criteria will be used to define the population of SWBs eligible for monitoring. The SWB will have to be packaged for at least one year and the equivalent plutonium content must exceed 10 g (grams Pu plus 66 times grams of Am-241).

The SWB must contain materials like those associated with drum vent filter failures and the SWB must contain at least 5-weight percent hydrogenous material. Only two SWB monitoring groups have been defined. MG SWB 1 consists of combustibles (IDCs 821 and 822), plastic (IDC 825), HEPA filters (IDCs 490 and 492), and composite debris (IDCs 3010 and 3011). MG SWB 1 will be monitored to a 100/0 confidence level goal. MG SWB 2 consists of light metal (IDCs 480 and 824) and glove box parts (IDC 488), and MG SWB 2 will be sampled at an 80/15 confidence level goal. The results from the initial testing of SWB filters will be followed closely by the Technical Review Team to determine if any changes in the composition of the MGs or confidence level goals will be required. The SWB monitoring groups are given in Table 4.

Table 4. SWB Monitoring Groups

Monitoring Group (MG)	IDCs	Inspection Frequency	Confidence Level Goal
SWB 1	490, 492, 821, 822, 825, 3010, 3011	annual	100/0
SWB 2	480, 488, 824	annual	80/15

5 Sample Population Determination

The following discussion applies to each of the five OP and six RP and TRU waste risk-level-based residue monitoring groups identified in Table 2 and Table 3. This discussion also applies to the SWB monitoring groups identified in Table 4.

5.1 Drum Sample Population Determination

The sample population for the OP, RP and TRU waste drums is determined based on the most current actual inventory of drums and the minimum required sample size calculated to meet the required confidence level goals, assuming no failures. For groups that require monitoring on an annual basis, the inventory of drums shall be determined at the start of each new fiscal year. This drum inventory and the randomly selected sample population will be identified and documented by the end of October. New drums with a single filter failure will be added to the appropriate TP in October of each year. New multiple filter failure drums will be added to the appropriate TP in the calendar quarter following identification of the drum.

For the RP population, MG drums will not be selected for filter testing until six months after generation of the drum. This ensures filters will not be tested before adequate time has elapsed for detectable degradation. The randomly ordered selected sample list shall be cross checked with respect to headspace gas sampling and analysis to ensure that monitoring does not invalidate the equilibration time and restart the clock on the Drum Age Criteria (DAC). Similarly, the list will be cross checked relative to the vent filter change logs so that recently replaced filters are not checked. If available, and to the extent practicable, the schedule for headspace gas analysis will also be evaluated so that drum filter and internal package vent monitoring can be scheduled to coincide with headspace gas analysis and thereby minimize drum movement and worker exposure.

If a selected drum in a MG is unavailable for vent filter monitoring (e g , OP population drum that has recently been repackaged or RP population drum that has been shipped to WIPP), the next drum on the randomly ordered selection list from the same population will be monitored

5 2 SWB Sample Population Determination

Currently there are very few SWBs that contain MG SWB 1 IDCs, >10 g Pu, and have been packaged for over one year Therefore, even though this MG will be monitored at a 100/0 confidence level, the sample size will be small The MG SWB 2 sample will be selected to insure that the sample contains the SWBs with the highest plutonium content

6 Monitoring Criteria

The monitoring requirements differ for the OP and RP drum populations For OP wastes, external monitoring only will continue until the Residue projects complete repackaging operations As the residue drums are repackaged to ISSC and WIPP criteria, the RP population residue drums must meet the requirements of the ISSC The monitoring requirements for SWBs are similar to the requirements for OP drums

6 1 Original Packaging (OP) Monitoring

External vent filter surfaces will be examined for signs of corrosion and flow rates will be verified using the drum vent test procedure ("Vent Filter Flow Testing", PRO-Q61-Filter-001-Revision 2) to meet the performance criteria of $100 \text{ ml/min} < \text{flow rate} < 400 \text{ ml/min}$ In other words, the flow rate shall be greater the 100 ml/min and less than 400 ml/min

6 1 1 OP Drum Failure Response Actions

If a drum fails to meet the above monitoring criteria the following actions shall be taken

Vent Filter Failure

- The failed vent filter shall be replaced with a new vent filter
- The removed filter shall be retested to verify failure
 - Filters that test closed will be considered failures regardless of the retest results, except as discussed below
 - Filters that test open and show no signs of corrosion will not be considered failures if the retest is passed
 - Filters that test open and exhibit signs of corrosion will be considered failures regardless of retest results
- Drums with failed filters shall be placed on the appropriate TP list until repackaged
- Other actions as deemed necessary based on Technical Review Team assessment (e g , addition of GAC-B or more corrosion resistant filters)

In a few cases, false low-flow field airflow test results have been obtained because the headspace volume in the drum is insufficient to allow for an accurate test If a filter fails the field airflow test because of insufficient drum headspace volume and the filter passes the confirmation test, the filter will not be counted as a failed filter

6 1 2 Mitigation Actions for OP Drum Monitoring Group Populations That Fail the Confidence Level Criteria

Should a MG fail to meet the confidence level criteria, the following shall occur

- The Technical Review Team shall review the failed filter data to determine if a subpopulation within the MG is readily identifiable as the source of the failures
- A statistical analysis shall be performed to identify the increased sampling requirements for the MG, or identified subpopulation of the MG
- Based on the results of the additional sampling, the MG (or subpopulation of the MG) shall be reviewed by the Technical Review Team to determine if the monitoring requirements need to be increased

6 2 Repackaged (RP) Monitoring

The ISSC requires that two metal contamination barriers are present, and that each contamination barrier is vented or capable of withstanding any pressure generated internally. Demonstrating compliance with these stipulations requires that drums be opened because monitoring of external surfaces of internal containers and internal vents requires physical access to both.

Vents on pipe components are required to be monitored by this plan, but only pipe components containing material in one of the RP monitoring groups will be monitored. When multiple internal containers are present, only one of the containers needs to be monitored as long as no failures are detected. This is justified because (1) all containers within a single drum will have similar contents, and (2) all containers within a single drum share a common atmosphere in the drum interior and will tend to equilibrate. Therefore, if problems arise in any container, they will eventually manifest in others. If failures exceeding the desired confidence level goal within a drum population are detected, all internal vents will have to be monitored and/or problems mitigated. As long as the failure rate is within the confidence level goal, only a single internal barrier and vent need to be monitored. The specific monitoring is described below.

External vents will be examined for signs of corrosion, and flow rates will be verified using the drum vent test procedure to meet the performance criteria of 100 ml/min < flow rate > 400 ml/min. Vents on the inner contamination barrier will be examined for signs of corrosion, and flow rates will be verified using an approved vent test procedure to meet the performance criteria of 100 ml/min < flow rate > 400 ml/min.

6 2 1 RP Drum Failure Response Actions

If a drum fails to meet the above monitoring criteria the following actions shall be taken

Vent Filter Failure

- The failed vent filter shall be replaced with a new vent filter
- If multiple internal containers are packaged within the drum, all other internal container vent filters shall be tested

- The removed filter shall be retested to verify failure
 - Filters that test closed will be considered failures regardless of the retest results
 - Filters that test open but show no signs of corrosion will not be considered failures if the retest is passed
 - Filters that test open and exhibit signs of corrosion will be considered failures regardless of retest results
- Drums shall be placed on the appropriate TP list until shipped to WIPP for disposal
- Other actions as deemed necessary based on Technical Review Team assessment (e g , addition of GAC-B or more corrosion resistant filters to mitigate corrosive vapors)

6 2 2 Mitigation Actions for RP Drum Monitoring Group Populations That Fail the Confidence Level Goal Criteria

Should a MG fail to meet the confidence level goal criteria, the following shall occur

- The Technical Review Team shall review the failed filter data to determine if a subpopulation within the MG is readily identifiable as the source of the failures
- A statistical analysis shall be performed to identify the increased sampling requirements for the MG, or identified sub-population of the MG
- Based on the results of the additional sampling, the MG (or sub-population of the MG) shall be reviewed by the Technical Review Team to determine if the monitoring requirements need to be increased

6 3 Standard Waste Box (SWB) Monitoring

External vent filter surfaces will be examined for signs of corrosion and flow rates will be verified using the vent filter test procedure to meet the performance criteria of $100 \text{ ml/min} < \text{flow rate} > 400 \text{ ml/min}$

6 3 1 SWB Failure Response Actions

If a SWB fails to meet the above monitoring criteria, the following actions shall be taken

Vent Filter Failure

- The failed vent filter shall be replaced with a new vent filter
- The removed filter shall be retested to verify failure
 - Filters that test closed will be considered failures regardless of the retest results
 - Filters that test open but show no signs of corrosion will not be considered failures if the retest is passed
 - Filters that test open and exhibit signs of corrosion will be considered failures regardless of retest results
- Other actions as deemed necessary based on Technical Review Team assessment

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6 3 2 Mitigation Actions for SWB Monitoring Group Populations That Fail the Confidence Level Criteria

Should a MG fail to meet the confidence level criteria, the following shall occur

- The Technical Review Team shall review the failed filter data to determine if a subpopulation within the MG is readily identifiable as the source of the failures
- A statistical analysis shall be performed to identify the increased sampling requirements for the MG, or identified subpopulation of the MG
- Based on the results of the additional sampling, the MG (or subpopulation of the MG) shall be reviewed by the Technical Review Team to determine if the monitoring requirements need to be increased

7 Summary

This Plan will be maintained by the Technical Review Team leader and updated as necessary to reflect changes in the monitoring requirements or frequency *At a minimum, the Plan shall be reviewed and updated annually*

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APPENDIX 5

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APPENDIX 6
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REMOVAL OF DRUM FILTER CAPS AND DRUM LID-RETAINING BOLTS

Use of Banding and Crimping Tool

NOTE *The requirements in this appendix only apply to drums or standard waste boxes containing the IDCs listed in Section 5 2D*

A banding and crimping tool is used to remove the cap from drum and standard waste box (SWB) vent filters prior to obtaining headspace gas samples. A banding and crimping tool may be used for vent filter cap removal providing the following criteria are met

- 1 Removal of the vent filter cap is carried out in a well-ventilated area
- 2 The drum or SWB is grounded during the filter cap removal operation

A well-ventilated area is defined as an area or device that provides an airflow of at least 150 lineal feet/min in the area of the filter

Cutting Drum Lid-Retaining Ring Bolts

On occasion, a frozen nut is found on a drum lid-retaining ring bolt and the bolt must be cut to allow removal of the drum lid-retaining ring. The following criteria must be met before a drum lid-retaining ring bolt may be cut

- 1 The drum vent filter **SHALL** be removed from the drum
- 2 A flammable gas meter **SHALL** be used to verify that a flammable gas mixture does not exist in the drum headspace
- 3 If a flammable gas mixture does exist in the drum headspace, the drum must be allowed to vent until a flammable gas mixture no longer exists in the drum headspace

If a flammable gas mixture is found in the drum headspace, a flammable gas meter may be used to determine when the flammable gas mixture no longer exists. Questions concerning the required venting time should be directed to Fire Protection Engineering

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Rocky Flats Environmental Technology Site

PRO-N20-HSP-34.01

REVISION 3

FIRE PROTECTION SYSTEM IMPAIRMENTS, DEFICIENCIES AND ABANDONED IN PLACE

Responsible Organization Fire Protection Engineering Effective Date 12/18/01

APPROVED BY Fire Protection Program Manager 12/10/01

Title _____ Date _____

Bruce Campbell [Signature]

Print Name Approval Signature

N/A

Print Name of Responsible Manager (N/A if RM is Approval Authority)

The Responsible Manager Has Determined The Following Organization's Review Is Required. Review Documentation Is Contained In The Document History File.

Engineering, Safety, and Quality Programs
Fire Department
Material Stewardship and Offsite Shipment Project
Remediation, Industrial Building D&D, and Site Services Project
Strategic Planning and Integration
707/776/777-Closure Project
771 Closure Project
Traffic Management
Wackenhut Services

IMPORTANT NOTES

This procedure supersedes PRO-N20-HSP-34 01, Revision 2
Periodic Review Frequency 4 years from the effective date
ISR Review SISRC # 02-02 (11-29-01) SES/USDQ Review SES-RFP-01 1633-MAW

Reviewed for Classification/UCNI

By DonDUSTIN (U)
Date 10 Dec 01 Per UCNI

DCF Originator Bill VandenBoogaard
Print Sign Date 1/14/02

Organization Fire Protection Engineering

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Print Sign Date 1/23/02

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Assigned SME Dave Tomecek

Organization Fire Protection Engineering

Phone/Pager/Location 2585/303-439-0485/B130

Fire Protection System Impairments, Deficiencies and Abandoned In Place

Document Title

PRO-N20-HSP-34 01 Rev 3

Existing Document Number and Revision

N/A

New Document Number and Revision (if applicable)

Type of Document

- ☐ Policy ☒ Procedure (indicate type) ☐ Instruction
☐ Mgt Directive ☐ Technical ☐ Alarm ☐ Job Aid
☐ Manual ☒ Admin ☐ Other ☐ Other

If "Other" is checked, please specify type NA

Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Minor
☐ Revision ☒ Major
☐ Cancellation

Proposed Modification

Update the LOEP
Page 6, Section 3, change last paragraph
Page 7, Section 4, change definition of Abandoned in Place, Nonenergized
Page 13, Section 5 4, change first paragraph
Page 28, Section 8, change fourth paragraph
Page 28, Step 8 [2], change
Page 31, Step 8 [11][A], change
Page 32, Step 8 [11][B], change
Page 33, Step 8 [11][D], change
Page 34, Step 8 [22], change
Page 15, Step 6. D. 1., change

Justification

Provide additional guidance and instruction with respect to the handling of Abandoned In Place systems and components

External (Technical) Review

Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
Resp Mgr	B. Campbell	1/23/02	Material Stewardship	1/31	2/16/02
FPE-SME	B. Campbell	1/23/02	RISS	1/31	2/14/02
371/374 Closure Project	1/31	2/17/02	SP&I	1/31	1/17/02
707/776/777 Closure Project	1/31	1/30/02	EC&C	1/31	2/21/02
771 Closure Project	1/31	2/12/02			
ES&QP	1/31	2/11/02			

Special Reviews (NOTE Other Special Reviews may be required See PRO-815-DM-01 for more information)

ISR (Number or "Not Required")

SISREC 02-04 (2-27-02)

TI Alignment (signature or N/A)

Sign

N/A

Date

Reviewed for Classification
(If Required, "N/A" if not)

By

N/A

Date

Approval (Completed to approve changes and cancellations only New documents and revisions are approved by signature on the document cover page)

Approval Authority

Print Name

Sign

Date

Effective Date

3-8-02

DCF Originator Bill VandenBoogaard *[Signature]* 12-12-01
Print Sign Date

Organization Fire Protection Engineering

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Responsible Manager Bruce Campbell *[Signature]* 12/12/01
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Organization Fire Protection Engineering

Phone/Pager/Location 2585/303-439-0485/B130

Fire Protection System Impairments, Deficiencies, and Out of Commission
Document Title

PRO-N20-HSP-34 01 Rev 3
Existing Document Number and Revision

N/A
New Document Number and Revision (if applicable)

Type of Document

☐ Policy ☒ Procedure (indicate type) ☐ Instruction
☐ Mgt Directive ☐ Technical ☐ Alarm ☐ Job Aid
☐ Manual ☒ Admin ☐ Other ☐ Other

If "Other" is checked, please specify type NA

Type of Modification

☐ New ☒ Change
☐ One Time Use Only ☒ Minor
☐ Revision ☐ Major
☐ Cancellation

Proposed Modification	Justification
Page 2, update the LOEP Page 20, change Note 2	Update procedure Correct a confusing statement. Address concern SAC Item, 12/6/01 DOE Rec No 8375, B771/Site

External (Technical) Review

Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
Resp Mgr	<i>[Signature]</i>	12/12/01			
FPE-SME	<i>[Signature]</i>	12-12-01			

Special Reviews (NOTE Other Special Reviews may be required See PRO-815-DM-01 for more information)

ISR (Number or "Not Required")	Not Required	Reviewed for Classification (If Required, "N/A" if not)
TI Alignment (signature or N/A)	N/A	By: N/A
Sign	Date	Date

Approval (Completed to approve changes and cancellations only New documents and revisions are approved by signature on the document cover page)

Approval Authority *[Signature]* *[Signature]* 12/12/01 Effective Date 12/14/01
Print Name Sign Date

LIST OF EFFECTIVE PAGES

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14	12/18/01		
15	3/8/02		
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1. PURPOSE

This procedure establishes the methodology to control fire protection system Impairments, Deficiencies, and Abandoned In Place

The fire protection system Impairment Program is controlled by

- Limiting Impairments to those that are essential
- Ensuring that the Impairments are restored as quickly as possible
- Ensuring that adequate interim Compensatory Measures are specified and implemented during Impairments

2. SCOPE

This procedure applies to all Rocky Flats Environmental Technology Site (Site) employees, contractors, and subcontractors who request, identify, and/or process Impairments to any fire protection system or fire protection components

This procedure applies to all fire protection system Impairments, Deficiencies, and Abandoned in Place

Inspection, testing, and maintenance activities performed under an approved procedure and scheduled on the Fire Systems (FS) Plan of the Day do not require a Red Tag Permit

This procedure addresses the following

- Processing an Impairment Request
- Implementing the Impairment
- Impairment extension request
- Impairment closeout
- Unplanned impairments
- Tracking fire protection system Deficiencies
- Categorizing Impairments and Deficiencies
- Establishing time frames for repair
- Tracking Abandoned In Place fire protection systems

Impairments and Deficiencies identified after the effective date of this procedure **SHALL** comply with this procedure. Previously existing Impairments **SHALL** be reviewed to determine the appropriate new Status Code level

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2. **SCOPE (continued)**

This procedure is intended to apply to Impairments and Deficiencies identified for active fire protection systems (automatic sprinkler systems, fire detection systems, filter plenum fire suppression systems, etc) during established work activities involving the systems (surveillance's, inspections, planned maintenance activities, etc) The application of this procedure to passive fire protection systems (fire barriers, fire doors, fire and smoke dampers, etc) and to work activities not directly related to the fire protection system (e g , removal of ceiling tiles, addition or removal of walls, hanging of signs or obstructions, etc) is at the discretion of Project Fire Protection Engineering and the Facility Manager, based on good operating practices and Authorization Basis documents

This revision supercedes PRO-N20-HSP-34 01, Revision 2

3. **OVERVIEW**

Impairment or Deficiency identification. The individual that identifies an abnormal system or equipment condition will report the situation to the Facility Manager who will categorize the condition as specified in this procedure. The Fire Department Operating Procedures define the specific action to be taken by the Fire Department personnel who initially identify an Impairment or Deficiency to a fire protection system

Evaluate the immediate Impairment or Deficiency impact(s). When a system Impairment is discovered the Identifier shall notify the respective Facility Manager (or the responsible individual) If the Impairment or Deficiency is identified after hours the Fire Dispatch Center and the building Shift Manager shall be notified Otherwise the Impairment Coordinator is notified The Facility Manager shall evaluate the Impairment or Deficiency to determine the impact on fire protection systems The Facility Manager may utilize any resources available to complete the evaluation including, but not limited to, the Shift Manager, Project Fire Protection Engineering, Core Fire Protection Engineering, Fire Systems Services, and the Fire Department PRO-V60-HSP-34 06, Compensatory Measures and Fire Watches, will be used to document the Compensatory Measures

3. **OVERVIEW (continued)**

Tag and remove from service. Fire protection equipment will be tagged with a Red Tag Permit and removed from service, when necessary. The Impairment or Deficiency will be reported to and documented by the Impairment Coordinator when required. In addition to this procedure, MAN-072-OS&IH PM, Occupational Safety and Industrial Hygiene Program Manual, Section 9, Lockout/Tagout, **SHALL** be implemented and utilized by the facility management to remove equipment from service.

Initiate corrective action. Impairments and Deficiencies of fire protection systems will be evaluated by Project Fire Protection Engineering, in association with building management, to validate the repair priority. Project Fire Protection Engineering will track the Impairment or Deficiency to ensure timely completion of repairs. The Facility Manager is responsible to coordinate the appropriate maintenance personnel to initiate the repairs.

Return to service. Following repairs the appropriate inspection(s) and/or Post Work Test(s) (PWTs) to verify restoration and document the return to service, **SHALL** be completed and the appropriate documentation filed as part of the Impairment record.

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Abandoned In Place. Fire Protection Systems that are no longer required by the various elements of the Fire Protection Program or other Site organizations may be Abandoned In Place (energized or non-energized). Systems that are to be disconnected from their utilities and immediately demolished are considered Abandoned In Place (non-energized) for the purposes of this procedure. The Fire Protection Program Manager **SHALL** approve designated systems as Abandoned In Place.

4 **DEFINITIONS**

Abandoned In Place. Abandoned In Place, for the purpose of this procedure, is defined as a fire protection system, subsystem, or component that is no longer required for fire protection and is no longer credited in an Authorization Basis document. Systems placed in an Abandoned In Place status require prior written approval from the Fire Protection Program Manager. Abandoned In Place systems are subclassified into Abandoned In Place, Energized, or Abandoned In Place, Nonenergized based on their connection to utility supplies.

- **Abandoned In Place, Energized.** These Abandoned In Place systems are supported by a utility system. An example would be a fire alarm system connected to electric power. These systems, though still active, are excluded from fire protection system inspection, testing, and maintenance requirements. However, a Fire Department response is required for alarms received from these systems, and failure of a component within the equipment will impose required repairs. Abandoned In Place, Energized systems are tracked and monitored in the Impairment Database as Status Code Level AIPE.
- **Abandoned In Place, Nonenergized.** These Abandoned In Place systems are physically isolated from other active system components and have had utilities positively shut off (via Lockout/Tagout procedures) or physically disconnected. Segregation includes isolation from site electrical, alarm, and water systems. Systems that are to be disconnected from their utilities and immediately demolished are considered Abandoned In Place (non-energized) for the purposes of this procedure. Abandoned In Place, Nonenergized systems are tracked and monitored in the Impairment Database as Status Code Level AIPN.

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Collective Significance Review. A review of collected data that considers individual elements in combination. For the purposes of this procedure, such a review is intended to determine if individual Status Code Level D Deficiencies can lead to a Status Code Level A Impairment when evaluated as a group.

Compensatory Measures. A measure instituted to compensate for the lack of fire protection during an Impairment. These measures do not replace the impaired fire protection system but are designed to reduce the risk or effect of fire during the Impairment. It is not the intent of this procedure to preclude the building establishing any Compensatory Measures as dictated by the building documents. All established Compensatory Measures must receive concurrence in writing from the Project Fire Protection Engineer. Compensatory Measures are established in accordance with PRO-V60-HSP-34 06, Compensatory Measures and Fire Watches.

4. **DEFINITIONS (continued)**

Core Fire Protection Engineering The personnel included within the Fire Protection Programs section in Engineering and Nuclear Licensing under Kaiser-Hill Engineering, Environmental, Safety and Quality Programs. This organization includes the Site Fire Protection Program Manager (Authority Having Jurisdiction). Members performing functions under this procedure must be Qualified as Designers (Fire Protection), as a minimum, in accordance with 1-V51-COEM-DES-210, Site Engineering Process Procedure.

Deficiency (Status Code Level D). A Deficiency is a fire protection system condition that is a violation of a code or standard, is an undesirable system configuration, or represents a degradation due to partial failures, but such conditions do not challenge the overall intended function of the system. Examples include low static pressures that are not below design pressures for sprinkler systems, failed light bulbs in fire alarm panels, single detector failure (depending on the size and the configuration of the system), valves that leak to a limited extent, failed batteries in fire alarm panels provided with acceptable normal power, fire alarm systems providing intermittent or continuous false signals to the Fire Dispatch Center, and loss of voice communication of fire phones.

Duration. The length of time the requester expects the Impairment to prevail. This information will be determined when the requester discusses the Impairment with Fire Protection Engineering.

Fire Protection System. Any fire safety system that detects, extinguishes, or limits the extent of fire damage or enhances fire life safety.

Impairment. An Impairment is a fire protection system condition that challenges the overall intended function of a system. Examples include system static pressures below design pressures, loss of main and backup power sources to a fire alarm panel, single or multiple failed devices in a detection system (depending on the size and configuration of the system), deluge valves that fail to open upon a signal from a detection system, any fire alarm that is latched in the alarm position preventing additional alarms from the system to be transmitted, or any latched supervisory alarm that indicates a system failure and the ability to transmit an actual fire alarm has not yet been verified, and fire phones that do not transmit alarm signals.

4. **DEFINITIONS (continued)**

Impairment/Deficiency Database. A computer database maintained by the Site Impairment Coordinator to track all identified fire protection Impairments, Deficiencies, and Abandoned In Place systems. The Impairment Database is considered the official record for the status of Impaired, Deficient, or Abandoned In Place fire systems.

Planned Impairment (Status Code Level C). An Impairment that would result during the implementation of an approved work package that has been placed on the appropriate Plan of the Day schedule(s) for Fire Systems and individual buildings. A Planned Impairment is assigned a Status Code Level C in the fire protection system Impairment Database.

Project Fire Protection Engineering The personnel performing fire protection engineering functions for the individual Site Projects (i.e., Material Stewardship and Offsite Shipment, 371/374 Closure Project, 707 Closure Project, 771 Closure Project, 776/777 Closure Project, and Remediation, Industrial Building D&D, & Site Services Project). Members performing functions under this procedure must be Qualified as Designers (Fire Protection), as a minimum, in accordance with 1-V51-COEM-DES-210, Site Engineering Process Procedure.

Red Tag Permit. The Red Tag Permit (often called an "Impairment Tag") provides key information on the Impairment, Deficiency, or Abandoned In Place status which allow emergency response personnel to utilize fire protection systems that may otherwise be unavailable. The red Tag Permit acts as a field indicator only. See the definition of Impairment/Deficiency Database.

Status Code Level. A code assigned to an Impairment or Deficiency to assist Facility Managers and fire protection personnel. Status Code Level A and C entries are Impairments, Status Code Level D entries are Deficiencies, Status Code Level AIPE entries are Abandoned In Place, Energized fire protection systems, Status Code Level AIPN entries are Abandoned In Place, Nonenergized fire protection systems. Appendix 1, Status Code Level Categorization and Repair Time Decision Tree, contains information on the particular Status Code Levels.

4. **DEFINITIONS (continued)**

Technician. For the purposes of this procedure "Technician" could indicate personnel from Fire Systems, the Fire Department Senior Officer, or personnel from the Alarm Radio Communication Instrumentation Equipment (ARCIE) group

Unplanned Impairment (Status Code Level A). An Impairment that would result from system breakdowns or component failures. An Unplanned Impairment is assigned a Status Code Level "A" in the fire protection system Impairment Database

5. RESPONSIBILITIES

5.1 Facility Manager or designee

Notifies the Impairment Coordinator of all Impairments and Deficiencies to fire protection systems

Identifies and establishes any and all Compensatory Measures in accordance with PRO-V60-HSP-34 06 and the applicable Authorization Basis documents

Restores Status Code Level "A" and "C" Impairments within the time frame established by this procedure

Reports to Fire Protection Engineering if any Status Code Level "A" or "C" Impairment will exceed the established restoration time frame

Evaluates, with assistance from the Impairment Coordinator and Project Fire Protection Engineering, the Impairment or Deficiency to determine the impact on fire protection systems

Enters Deficiencies into the Plant Action Tracking System (PATs) in accordance with 3-X31-CAP-001, Corrective Action Process

Ensures that repair work begins as soon as the approved Compensatory Measures are instituted

Notifies the Shift Superintendent within 1 hour if the Impairment impacts a sitewide system

Ensures that the Fire Hazards Analysis and impacted procedures, if active for a facility, are updated when fire protection systems are Abandoned In Place, and that drawings are evaluated for revision

5.2 Fire Department Senior Officer

Acts as the Impairment office after normal working hours

Assumes the responsibility for initiating Impairments and Deficiencies after normal working hours or as a result of an alarm response

Notifies the Impairment office when an Impairment or Deficiency is opened as a result of a Fire Department response

Maintains the Impairment/Deficiency Database after hours

Provides Abandoned in Place evaluations, as required

5.3 Core Fire Protection Engineering/Fire Protection Program Manager

Oversees the implementation of this sitewide procedure

Assists individuals and organizations in the restoration of Impairments and Deficiencies, including mediation of conflicts regarding close-out documentation

Approves in writing, each Abandoned In Place fire protection system

Approves time extensions for corrective actions that exceed time frames established in this procedure and reaffirms the approval or modification of all Compensatory Measures associated with the original Impairment and the new restoration time

Provides status reports to senior management as needed

Deviations from this procedure may be granted by the Fire Protection Program Manager with written documentation and justification and the appropriate review

Analyzes and trends Impairments semiannually, identifying, where possible, the performance reliability of the different Fire Protection Systems onsite

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5.4 Project Fire Protection Engineering

Prepares calculations, in accordance with 1-V51-COEM-DES-210, Site Engineering Process Procedure, to determine if fire protection systems can be considered for Abandoned In Place status

Assists the Facility Manager or designee with identifying the actions required to minimize the damage from fire during the outage

Monitors Impairments to ensure they are restored in a timely manner

Reviews Impairment Database weekly to determine if any new Deficiencies have been identified and performs a Collective Significance Review, as necessary

Reviews and concurs with any Compensatory Measures identified by the Facility Manager or designee, to address Impairments or Deficiencies

5.5 Impairment Coordinator

Complies with the requirements of this procedure when impairing a fire protection system

Reviews restoration inspections/tests of the fire protection system to ensure functionality

Monitors the restoration process until the fire protection system is functional with respect to the subject Impairment

Maintains the Impairment/Deficiency Database

5.6 Technician

Prepare Red Tag Permits as required for Impairments and Deficiencies

Performs the isolation of systems when an Impairment is approved

5.6 Technician (continued)

Performs restoration inspections of the fire protection system to ensure functionality

Coordinates with the Impairment Coordinator with respect to Impairments and Deficiencies.

Notifies the appropriate Facility Manager or designee and the Fire Dispatch Center of a fire protection system Impairment or Deficiency

5.7 Utility Managers

Notify the Impairment Coordinator at least 24 hours in advance for all planned utility outages affecting fire protection systems

6. **REQUIREMENTS**

- A Fire protection system Impairments and Deficiencies found in the field **SHALL** be reported to the Impairment Coordinator
- B Planned Impairment requests or reported new unplanned Impairments **SHALL** be evaluated by the Impairment Coordinator, with assistance from Project Fire Protection Engineering as needed, to determine the affect on the overall site fire protection system and includes the following
- Reason for the Impairment
 - The number of hydrants, sprinkler systems, detection systems, or other equipment affected A diagram or map may be required to assist in the evaluation
 - Estimated duration of the Impairment
 - Other sections or systems already out of service
 - Impact on overall site operations
- Deviations from this procedure **may** be granted by the Fire Protection Program Manager with written documentation and justification and the appropriate review
- C The Status Code Level of the Impairment or Deficiency is determined based on the information provided by the Requester and coded in accordance with the decision tree in Appendix 1 Preliminary coding **may** be performed by the Facility Manager, but the final coding **SHALL** be performed by the Impairment Coordinator.
- D Project Fire Protection Engineering **SHALL** perform a Collective Significance Review of newly identified Impairments/Deficiencies Collective Significance reviews resulting in the need to upgrade Impairments or Deficiencies, **SHALL** be reported to the Impairment Coordinator.
- 1 Project Fire Protection Engineering **SHALL** review the Impairment/Deficiency Database weekly to determine if any new Deficiencies have been identified **IF** any new deficiencies are identified, **THEN** a Collective Significance Review **SHALL** be conducted as described below

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6. **REQUIREMENTS (continued)**

- 2 Newly identified Deficiencies **SHALL** be evaluated in conjunction with all existing Deficiencies **IF** the evaluation demonstrates that the reliability of the fire protection system is degraded such that continued reliance on the system to achieve the design function is no longer considered likely, **THEN** the Deficiencies, as defined by the Project Fire Protection Engineer **SHALL** be collectively re-coded as an Impairment (Status Code Level A)
- 3 **IF** the newly identified Deficiencies, combined with the existing Deficiencies, does not degrade the continued reliance on the system, **THEN** the Deficiencies are assigned Status Code Level D.
 - a Status Code Level D Deficiencies **SHALL** be entered in the Plant Action Tracking System (PATS)
 - b The Facility Manager or designee is responsible for entering Deficiencies into the PATS
- E In an emergency, such as an underground water main rupture, the following actions **SHALL** be taken prior to completing the Impairment Request
 - Isolate the area
 - Place the facility in a safe configuration
 - Initiate the Impairment notification process
 - Implement Compensatory Measures in affected buildings in accordance with PRO-V60-HSP-34 06

IF an impairment is initiated that impacts the operability of a sitewide system, **THEN** the Shift Superintendent **SHALL** be notified within 1 hour
- F The Impairment Coordinator logs the affected fire protection systems in the Impairment/Deficiency Database
- G Before any additional fire protection systems are shutdown, except in an emergency situation, Compensatory Measures **SHALL** be initiated to reduce the fire risk in accordance with PRO-V60-HSP-34 06

6. **REQUIREMENTS (continued)**

- H Repair work for Impairments **SHALL** begin as soon as the approved Compensatory Measures are instituted and the system(s) shutdown. If the Impairment is a Status Code Level A repair work **SHALL** continue around the clock until the system is functional, unless a written exception is provided by the Fire Protection Program Manager or designee.
- I The Facility Manager or designee **SHALL** ensure that all approved Compensatory Measures are implemented immediately upon notification of an Impairment and remain in place for the duration of the Impairment and until the Fire Dispatch Center has been notified of closure of the Impairment.
- J Any valve or switch affected by the Impairment is tagged after the device is positioned. The Technician (or the Fire Department after normal working hours) **SHALL** prepare a Red Tag Permit or Auxiliary Tag in accordance with the instructions printed on the tag.
- K. Project Fire Protection Engineering **SHALL** review and concur with any subsequent Compensatory Measures identified by the Facility Manager or designee in accordance with PRO-V60-HSP-34 06.
- L If a fire protection system is no longer required as a safety system and is being Abandoned In Place, the system **SHALL** be tagged Abandoned In Place. If problems develop in the Abandoned In Place system that affect other active systems, subsystems, or components, then the Abandoned In Place system **SHALL** be subject to maintenance and repair including alarm transmittal and dispatching capabilities.
- M If a fire protection system is no longer required and is being Abandoned In Place, the system **SHALL** be Abandoned In Place in accordance with Section 8, Abandoned In Place Systems.

6. **REQUIREMENTS (continued)**

- N The Impairment Coordinator **SHALL** enter the following information on the Fire Protection Impairment/Deficiency Log, as provided
- Date
 - Time initiated
 - Red Tag Permit number
 - Equipment tagged out
 - Reason for the impairment/deficiency
 - Name of the person placing the tag
- O Core Fire Protection Engineering **SHALL** analyze and trend the Impairments semiannually in order to improve the fire protection system reliability. The analysis **SHALL** identify, where possible, the performance reliability of the different fire protection systems onsite. The Fire Protection Impairment/Deficiency Log is to be forwarded to Core Fire Protection Engineering for records retention.
- P The Impairment Coordinator, or other qualified and authorized personnel, **SHALL** evaluate the repairs made to the fire protection system prior to declaring it functional and closing the Impairment or Deficiency.
- Q Upon restoration the Fire Dispatch Center **SHALL** be notified that the system has been returned to service. **IF** the system is a sitewide system, **THEN** the Shift Superintendent **SHALL** also be notified.
- R When satisfactory test results are obtained the Fire Systems, Maintenance, or Facility Management personnel **SHALL** provide documentation and notify the Impairment Coordinator.
- S After removal of the Red Tag Permit, the Impairment Coordinator **SHALL** enter the following information on the Fire Protection Impairment Log, as provided
- Date and time that the control was terminated
 - Repairs completed
 - System post-repair test, as applicable
- T The facility **SHALL** be notified by the Technician or the Impairment Coordinator when the Red Tag Permit(s) have been removed.

6.1 Utility Outages Affecting Fire Protection

- A Utility Managers **SHALL** notify the Impairment Coordinator at least 24 hours in advance for all planned utility outages (i.e., electrical, water) affecting fire protection systems
- B Facility Managers **SHALL** notify the Impairment Coordinator in advance for all planned utility outages affecting fire protection systems. Immediate notification **SHALL** be made to the Impairment Coordinator (or the Fire Department after normal working hours) in the event of an emergency outage
- C The Fire Department, when receiving initial notifications, **SHALL** follow established procedures and make notification to the Impairment Coordinator when an Impairment is initiated
- D Facility Managers **SHALL** determine if fire protection systems will be affected by the utility outage. If fire protection systems are affected the Facility Manager **SHALL** notify the Impairment Coordinator
- E The Facility Manager **SHALL** notify the Fire Department when the utility system is back in service
- F Unplanned utility outages, except as described in 6.1[G], **SHALL** be processed in accordance with Section 7.5
- G Momentary Site electrical utility system outages resulting from power interruptions or spikes (Site power grid electrical surges, spikes created during planned work on Site systems, lightning strikes, wind activity, etc.) that cause supervisory or trouble signals in fire protection system **SHALL** be evaluated within 4 hours of the outage by Fire Officer to establish if an Impairment or Deficiency exists. If an Impairment or Deficiency exists, then Fire Dispatch **SHALL** notify Facility Management to initiate actions in accordance with Sections 7.5 and 7.6

7. INSTRUCTIONS

7.1 Processing a Planned Impairment Request

NOTE 1 *PRO-V60-HSP-34 06 provides guidance for establishing Compensatory Measures during periods of fire protection system impairment*

NOTE 2 *MAN-072-OS&IH PM, Section 9, Lockout/Tagout, addresses the use of Lockout/Tagout versus the use of the Red Tag Permit*

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Facility Manager or designee

- [1] Complete the applicable portions of the Impairment Request

The following information should be provided as a minimum.

- What is planned and where
- Why the impairment is required
- How long the impairment will last
- Who is handling the work.

- [2] Forward the Impairment Request to the Impairment Coordinator for review and approval.

Impairment Coordinator

- [3] Review the Impairment Request
- [4] Resolve any concerns with the Impairment Request
- [5] IF the Impairment Request is of an unusual type or is inconsistent with past practice,
THEN obtain concurrence from the Project Fire Protection Engineer by telephone, by facsimile, or in-person
- [6] Approve the Impairment Request

7.2 Planned Impairments

Facility Manager or designee

- [1] Request an Impairment in accordance with Section 7 1
- [2] Implement Compensatory Measures in accordance with PRO-V60-HSP-34 06

Technician

- [3] Impair the system as defined by the approved Impairment Request
- [4] Notify the Fire Dispatch Center that the Impairment has been implemented
- [5] Notify the Facility Manager or designee that the Impairment has been implemented
- [6] Provide documentation to the Impairment Coordinator

Facility Manager or designee

- [7] Monitor the Impairment status
- [8] **IF** the actions necessary to close the impairment are complete,
THEN proceed with closeout in accordance with Section 7 6

7.3 Unplanned Impairments

An Unplanned Impairment is a situation where a fire protection system or a fire protection system component failure occurs due to an unexpected occurrence, such as a ruptured pipe, wiring breakage or degradation, or a control panel malfunction

An Unplanned Impairment can be entered into as a result of.

- Conditions discovered during a Planned Impairment
- Surveillance testing
- System walkdowns

Technician

- [1] **IF**, during a Planned Impairment, a condition is discovered or a situation develops that is outside of the scope of the Planned Impairment,
AND the condition will require an Unplanned Impairment to correct,
THEN:

[A] Stop work

[B] Notify the Facility Manager or designee

[C] Initiate a Red Tag Permit

Facility Manager or designee

- [2] Notify the following personnel or organizations

- Shift Superintendent within 1 hour if the Impairment impacts a sitewide system
- Impairment Coordinator
- Fire Dispatch Center

- [3] Contact the Project Fire Protection Engineer and develop a plan-of-action and a repair priority to correct the Impairment. If the repair times, as identified in Appendix 1 cannot be met, then a new repair time **SHALL** be requested in accordance with Section 7.5, Impairment Extension Request

7.3 Unplanned Impairments (continued)

- [4] Implement the required Compensatory Measures with guidance from the Project Fire Protection Engineer in accordance with PRO-V60-HSP-34 06
- [5] Monitor the Impairment status
- [6] **IF** the work necessary to correct the Impairment cannot be completed in accordance with Appendix 1,
 THEN request an extension in accordance with Section 7 5
- [7] **IF** the actions necessary to close the Impairment are complete,
 THEN proceed with closeout in accordance with Section 7 6

7.4 Deficiencies

Deficiencies, by definition, do not impair a system's ability to function as intended. As such, the need for corrective action against the system is not as pressing as an Impairment. Deficiencies can include leaking valves, low residual pressures that are not below the system design pressures, failed light bulbs, or loss of a local supervisory signal.

Technician

- [1] **IF**, during a Planned Impairment, a condition is discovered or a situation develops that is outside of the scope of the Planned Impairment,
 THEN notify the Facility Manager or designee

Facility Manager or designee

- [2] **IF** the discovered condition results in a Deficiency **AND** does not present a condition that impacts the work being performed,
 THEN the work may continue

Efforts should be made to correct the Deficiency during the Planned Impairment as conditions allow in accordance with approved procedures

7.4 Deficiencies (continued)

- [3] **IF** the discovered condition results in a Deficiency **AND** does present a condition that impacts the work being performed,
THEN the work **SHALL** stop
- [4] Notify the following personnel or organizations
 - Operations Manager
 - Impairment Coordinator
 - Fire Dispatch Center
- [5] Contact the Project Fire Protection Engineer and develop a plan-of-action and a repair priority, if necessary, to correct the Deficiency A Collective Significance review, in accordance with PRO-V60-HSP-34 06, **SHALL** be a part of the developed plan-of-action
- [6] Ensure that the Deficiency is entered into the Plant Action Tracking System in accordance with 3-X31-CAP-001, Corrective Action Process
- [7] Implement any Compensatory Measures identified under the plan-of-action Compensatory Measures for Deficiencies **SHALL** be tracked in accordance with PRO-V60-HSP-34 06
- [8] Monitor the status of the Deficiency and any Compensatory Measures
- [9] **IF** the work necessary to correct the Deficiency cannot be completed in accordance with Appendix 1,
THEN request an extension in accordance with Section 7 5
- [10] **IF** the actions necessary to close the Deficiency are complete,
THEN proceed with closeout in accordance with Section 7 6

7.5 Impairment or Deficiency Extension Request

Facility Manager or designee

- [1] IF it is anticipated that the Impairment or Deficiency will extend beyond the preapproved time limit,
THEN request an extension
 - [A] IF the extension is expected to be two weeks or less from the date of the impairment,
THEN the request may be approved by the Project Fire Protection Engineer
 - [B] IF the extension is expected to be more than two weeks from the date of the impairment,
THEN the request SHALL be approved by the Fire Protection Program Manager
- [2] Verify that the proper Compensatory Measures are in place during the Impairment or Deficiency extended period

Project Fire Protection Engineer/Fire Protection Program Manager

- [3] Review the existing Compensatory Measures for the extension
- [4] IF the justification is adequate and the proper Compensatory Measures are in place,
THEN approve the extension request in writing
 - [A] IF the extension is being approved by the Project Fire Protection Engineer,
THEN provide a copy of the extension to the Fire Protection Program Manager
- [5] IF the justification is not adequate,
THEN provide the necessary information to achieve concurrence OR disapprove the extension request in writing

7.5 Impairment or Deficiency Extension Request (continued)

Facility Manager or designee

- [6] **IF** the extension is approved,
THEN provide a copy of the approved written extension to the Impairment Coordinator

Impairment Coordinator

- [7] Incorporate into the Impairment history file, as provided

7.6 Impairment or Deficiency Closeout

Facility Manager or designee

- [1] **IF** the fire protection system was removed from service,
THEN inform the Impairment Coordinator of the repair or maintenance completion

- [2] **WHEN** the Impairment or Deficiency is ready to be closed out,
THEN:

[A] Ensure that the restoration steps contained in the surveillance are completed

OR

[B] Ensure that the required Post-Work Test (PWT) is completed

- [3] Provide the close-out documentation to the Impairment Coordinator for concurrence

Impairment Coordinator

- [4] Review the close-out documentation
- [5] **IF** the Impairment Coordinator questions the close-out documentation,
THEN obtain concurrence, or further direction, from the Project Fire Protection Engineer

7.6 Impairment or Deficiency Closeout (continued)

- [6] **IF** the Impairment Coordinator or Project Fire Protection Engineer does not concur with the close-out documentation,
THEN request assistance from Core Fire Protection Engineering to resolve the obstacles to concurrence

Technician

- [7] Restore the fire protection system to service
- [8] Close the Impairment or Deficiency

NOTE *Close out of Impairments or Deficiencies is limited to the Impairment/Deficiency Database. As the database is considered the official record, removal of Red Tag Permits should occur at the soonest possible time based on ALARA issues, staffing levels, and priorities for other systems*

- [9] Notify the Fire Dispatch Center and the Facility Manager of the restoration and Impairment or Deficiency closure

Facility Manager or designee

- [10] Close-out any plans-of-action, any Plant Action Tracking System (PATs) items, and any Compensatory Measures in accordance with PRO-V60-HSP-34 06

8. ABANDONED IN PLACE SYSTEMS

Abandoned In Place Fire Protection Systems are systems that are no longer required by the various elements of the Fire Protection Program or other Site organizations. Abandoned In Place systems are subclassified into Abandoned In Place, Energized (AIPE), and Abandoned In Place, Nonenergized (AIPN), based on their connection to utility supplies.

Abandoned In Place, Energized (AIPE) systems are systems or portions thereof that are Abandoned In Place but remain active. Such systems are not tested, or subject to surveillance's or inspection, except as determined by Core Fire Protection Engineering, and are considered not functional under assessments such as Fire Hazards Analyses or life safety evaluations. Any type of fire protection system can be evaluated to be Abandoned In Place, Energized.

If during the period the system or portion thereof is considered Abandoned In Place, Energized, any associated failure that effects systems or portions thereof that are considered in service **SHALL** be considered as an Impairment and processed as outlined in Section 7. Any fire alarm or supervisory alarm must be treated as actual with respect to the Fire Department response.

Abandoned In Place, Nonenergized (AIPN) systems or portions thereof that are Abandoned In Place and have been physically isolated or disconnected from all of their utility supplies (electrical, alarm, water, gas, etc.) Systems that are to be disconnected from their utilities and immediately demolished are considered Abandoned In Place (non-energized) for the purposes of this procedure.

Facility Manager or designee/Operations Manager

- [1] IF a system is desired to be considered Abandoned In Place,
THEN provide information for evaluation to Project Fire Protection Engineering

Project Fire Protection Engineering

- [2] Prepare an evaluation to determine if the system is a candidate for being Abandoned In Place. The evaluation **SHALL** be prepared as a calculation in accordance with 1-V51-COEM-DES-210, Site Engineering Process Procedure. The evaluation **SHALL** indicate whether the system will remain energized or will be nonenergized.

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8. ABANDONED IN PLACE SYSTEMS (continued)

- [3] Initial preparation of the evaluation **SHALL** include, as a minimum, consideration of Department of Energy Orders 420 1 and 440 1 and documents identified as "Requirements" in Rocky Flats Calculation CALC-000-FPP-000628, Fire Protection Program Identification of Applicable Fire Protection Codes and Standards
- [4] Initial preparation of the evaluation **SHALL** include request for concurrence for placing the system Abandoned In Place from other safety organizations, as determined necessary by Project Fire Protection Engineering Minimum organizations include Nuclear Safety and Licensing, Occupational Safety and Industrial Hygiene, and hazardous materials regulatory organizations (RCRA permitting, etc) Written documentation of concurrence for or indifference to placing the system Abandoned In Place by the polled organizations **SHALL** be included in the evaluation Documentation **may** be by reference **IF** the originating document meets 1-V51-COEM-DES-210, Site Engineering Process Procedure, PRO-664-NSP-USQP, Nuclear Safety Program Unreviewed Safety Question Process, or similar Site recognized procedure
- [5] **IF** the system under evaluation is a glovebox detection system and the initial evaluation results in a positive response for placing a system Abandoned In Place, **THEN** go to Section 8 [10]
- [6] **IF** the system under evaluation is other than a glovebox detection system and the initial evaluation results in a positive response for placing a system Abandoned In Place, **THEN** submit the evaluation to the Fire Department for concurrence

Fire Department

- [7] Evaluation placing the system Abandoned In Place based on Standard Operating Procedures, typical tactical responses, and the Baseline Needs Assessment
 - [A] **IF** the evaluation results in a negative response for placing a system Abandoned In Place, **THEN** notify Project Fire Protection Engineering in writing

8. **ABANDONED IN PLACE SYSTEMS (continued)**

- [B] IF the evaluation results in a positive response for placing a system Abandoned In Place, THEN provide concurrence to Project Fire Protection Engineering

Project Fire Protection Engineering

- [8] Provide a written evaluation and Fire Department concurrence to the Fire Protection Program Manager for final review and approval

Fire Protection Program Manager

- [9] Review the initial evaluation for placing the system Abandoned In Place

- [A] IF the evaluation results in a negative response for placing a system Abandoned In Place, THEN notify Project Fire Protection Engineering in writing, specifying the reason for the negative response

- [B] IF the evaluation results in a positive response for placing a system Abandoned In Place, THEN provide concurrence to Project Fire Protection Engineering

Project Fire Protection Engineering

- [10] Provide written notification response to approve placing the system in an Abandoned In Place status to the following
Fire Protection Program Manager
Facility Manager or designee
Fire Department
Fire Dispatch Center
Impairment Coordinator

Facility Manager or designee

- [11] IF the system is to be designated Abandoned In Place, Nonenergized, develop the necessary work process documents (Engineering Orders, IWCP work package, etc) to discontinue function of the system via Site engineering practices Project Fire Protection Engineering SHALL review the work documents prior to implementation The following work steps SHALL be included in the work instructions, as a minimum

8 ABANDONED IN PLACE SYSTEMS (continued)

- [A] IF specific components are to be placed Abandoned In Place, Nonenergized (e g , single detectors, single rooms of sprinklers, etc) in detection/alarm, suppression, or extinguishing systems, THEN Associated alarms within the removed section SHALL be disconnected from the appropriate Site alarm system Associated alarms within the removed section SHALL be deleted from the appropriate Site alarm system database Electrical power supplies within the removed section SHALL be disconnected from the system and appropriately terminated at their source Water supplies SHALL be isolated at the nearest convenient location that will not interfere with the remaining systems The removed portion of the system SHALL be drained Gas or chemical cylinders or supplies, including compressors, connected to the removed portion SHALL be disconnected If convenient, all cylinders SHALL be removed from the area and dispositioned appropriately Any pressurized piping SHALL be vented Signage to indicate the portion of the system that is Abandoned In Place SHALL be placed on the system and in conspicuous areas to inform occupants of the system's status
- Exception:** No signage is required if the components are to be demolished within 7 days of disconnect from the system Testing and inspection procedures associated with the system SHALL be modified as necessary to reflect the modified configuration of the system Maintenance work requests or work process documents associated with the portion of the system to be removed SHALL be canceled or modified, as appropriate Drawings SHALL be updated to indicate the modified configuration of the system
- [B] IF an entire detection/alarm, suppression, or extinguishing system or subsystem is to be placed Abandoned In Place, Nonenergized, THEN Associated sub-system alarms SHALL be disconnected from the appropriate Site alarm system Associated alarms SHALL be deleted from the appropriate Site alarm system database Electrical power supplies SHALL be disconnected from the system and appropriately terminated at their source

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8. ABANDONED IN PLACE SYSTEMS (continued)

Water supplies **SHALL** be isolated at the nearest convenient location that will not interfere with other systems (preferably at the main control valve exterior to the building) The system **SHALL** be drained

Gas or chemical cylinders or supplies, including compressors, **SHALL** be disconnected If convenient, all cylinders **SHALL** be removed from the area and dispositioned appropriately Any pressurized piping **SHALL** be vented

Signage to indicate that the system is Abandoned In Place **SHALL** be placed on the system and in conspicuous areas to inform occupants of the system's status These signs may be provided by the Impairment Coordinator

Exception: No signage is required if the system is scheduled to be demolished within 7 days of isolation from utilities If demolition does not commence within 7 days of isolation from utilities, then the Project Fire Protection Engineer **SHALL** determine the need for signage with concurrence from the Fire Protection Program Manager

Testing and inspection procedures associated with the system **SHALL** be canceled or modified, as appropriate

Maintenance work requests or work process documents associated with the system **SHALL** be canceled or modified, as appropriate

Drawings, including site utility drawings, **SHALL** be updated to indicate the current configuration of the system

[C] **IF** a fire barrier system or component is to be Abandoned In Place, Nonenergized, **THEN**

Fire barrier markings, including bar codes used for tracking, **SHALL** be removed, painted, or otherwise deleted from the barrier and its components (doors, windows, etc)

Provide information to Fire Systems Services to remove any bar codes from the tracking database associated with testing and inspection of associated Fire Doors

Drawings **SHALL** be updated to indicate the current configuration of the system

8. **ABANDONED IN PLACE SYSTEMS (continued)**

[D] IF any other system is to be Abandoned In Place, Nonenergized, including underground utilities, THEN Core Fire Protection Engineering SHALL be consulted on the proper manner of removing the system from service. As a minimum, the following SHALL be included in any work documents:

Associated alarms that report to the Fire Dispatch Center SHALL be disconnected from the appropriate Site alarm system.

Associated alarms that report to the Fire Dispatch Center SHALL be deleted from the appropriate Site alarm system database.

Signage SHALL be posted indicating the status of the system.

Exception: No signage is required if the system is to be demolished within 7 days of isolation from utilities.

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[12] IF the system or subsystem is to be Abandoned In Place, Energized, THEN signage SHALL be posted indicating the status of the system.

[13] IF the system or subsystem is to be Abandoned In Place, Nonenergized, THEN submit an Impairment Request to the Impairment Coordinator to support shutdown of utility systems.

[14] IF the system or subsystem is to be Abandoned In Place, Energized, THEN submit an Impairment Request to the Impairment Coordinator.

Impairment Coordinator

[15] IF the Impairment Coordinator questions the request to place the system Abandoned In Place, THEN review the documentation with Project Fire Protection Engineering.

[16] IF the review does not resolve questions with the Abandoned In Place request documentation, THEN request assistance from Core Fire Protection Engineering to resolve the obstacles.

[17] Approve the request.

8. **ABANDONED IN PLACE SYSTEMS (continued)**

Technician

- [18] Initiate a Red Tag Permit, identifying the system as "Abandoned In Place", as defined by the Impairment Request
- [19] Notify the Fire Dispatch Center and the Facility Manager or designee that the system has been Abandoned In Place, Energized or Abandoned In Place, Nonenergized, as defined by the Impairment Request
- [20] Provide documentation to the Impairment Coordinator

Facility Manager or designee

- [21] IF the system or subsystem is to be Abandoned In Place, Nonenergized, isolate the system or subsystem in accordance with the work package
- [22] Ensure signage indicating the status of the system is provided, if required

Impairment Coordinator

- [23] Declare the system Abandoned In Place, Energized or Abandoned In Place, Nonenergized, as defined by the Impairment Request
- [24] Update the Impairment/Deficiency Database, closing all existing Impairments and Deficiencies associated with the Abandoned In Place system

Facility Manager or designee

- [25] Remove/revise those surveillances associated with the system identified by Project Fire Protection Engineering from the active list of procedures and/or instructions
- [26] Ensure the Fire Hazards Analysis, if active for the facility, is updated to include the information contained in the Abandoned In Place evaluation

9. **RECORDS**

Fire Systems

- [1] Process all records generated by this procedure in accordance with Table 9-1,
Records Processing

Table 9-1, Records Processing

Record Identification	Record Type Determination	Protection/Storage Methods	Processing Instructions
1 Appendix 2, Impairment Request 2 Red Tag Permit 3 Fire Protection Impairment/Deficiency Log 4 Collective Significance Review Reports	QA Record (Non-WIPP, LL, LLM)	Fire Systems SHALL implement a reasonable level of protection to prevent loss and/or degradation. Fire Systems should define specific protection and storage methods for the records, as defined in 1-V41-RM-001, Records Management Guidance for Records Sources. It is recommended that the Fire Systems work with the Site Records Management organization to assure reasonable controls are being implemented.	Fire Systems SHALL manage the documents generated by this procedure in accordance with 1-V41-RM-001.

10. REFERENCES

DOE Order 420 1, Facility Safety

DOE Order 440 1, Worker Protection Management for DOE Federal and Contractor Employees

DOE-STD-1066-99, Fire Protection Design Criteria

MAN-072-OS&IH PM, Occupational Safety and Industrial Hygiene Program Manual, Section 9, Lockout/Tagout

NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems

PRO-664-NSP-USQP, Nuclear Safety Program Unreviewed Safety Question Process

PRO-V60-HSP-34 06, Compensatory Measures and Fire Watches

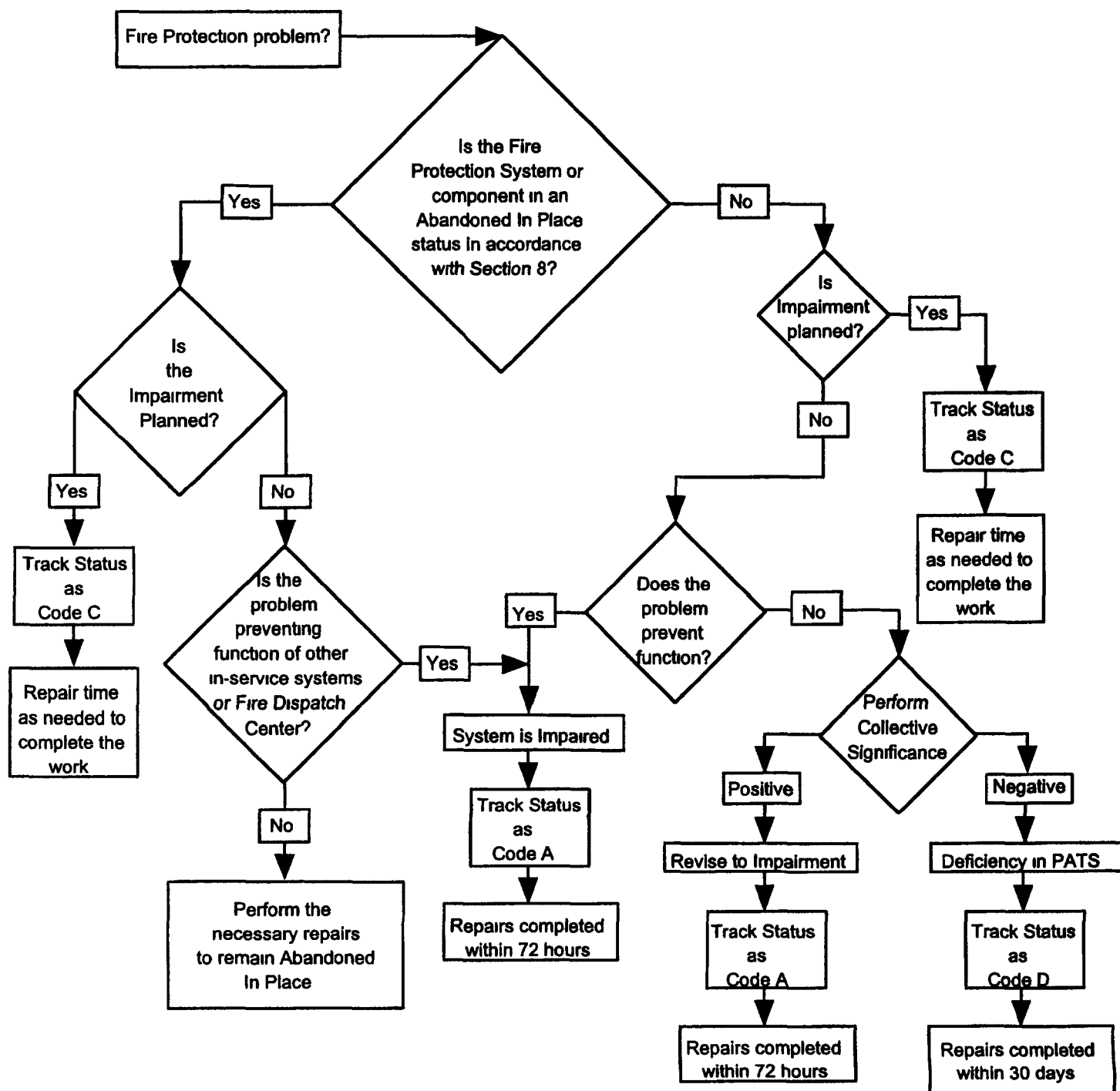
1-V41-RM-001, Records Management Guidance for Records Sources

1-V51-COEM-DES-210, Site Engineering Process Procedure

3-X31-CAP-001, Corrective Action Process

APPENDIX 1
Page 1 of 1

STATUS CODE LEVEL CATEGORIZATION AND REPAIR TIME DECISION TREE



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APPENDIX 2

Page 1 of 1

IMPAIRMENT REQUEST

Building # _____ Location or Room # _____ Alarm Point _____ Date ____/____/____

TYPE OF SYSTEM

- | | | |
|---|---|--|
| <input type="checkbox"/> Wet pipe sprinkler | <input type="checkbox"/> Glovebox overheat | <input type="checkbox"/> CO2 |
| <input type="checkbox"/> Dry pipe sprinkler | <input type="checkbox"/> Ceiling heat detection | <input type="checkbox"/> Halon |
| <input type="checkbox"/> Cooling tower deluge | <input type="checkbox"/> Plenum heat detection | <input type="checkbox"/> Manual alarms |
| <input type="checkbox"/> Filter plenum deluge | <input type="checkbox"/> Smoke detection | |
| <input type="checkbox"/> Other _____ | | |

Reason for Service _____

IWCP/Charge # _____

Requesting Organization _____

Requesting Organization Contact _____ Phone _____ Pager _____

Is an Alarm Deactivation Report required? (per Section 7 L of the COOP manual) ☐ Yes ☐ No

Approximate duration of shutdown _____

Date and time of requested shutdown Date ____/____/____ Time _____

Pre-evolution briefing Date ____/____/____ Time _____

- NOTE**
- *ALL SUPPORTING DOCUMENTATION MUST BE COMPLETED PRIOR TO SYSTEM SHUTDOWN*
 - *REQUESTER MUST REVIEW PRO-V60-HSP-34 06 FOR FIRE WATCH AND COMPENSATORY MEASURES*

IMPAIRMENT OFFICE USE ONLY

If the system is drained, is the water to be tested after the system is refilled? ☐ Yes ☒ No

Comments _____

Impairment Authorization _____ Date ____/____/____

FPE Concurrence, as applicable

FPE Name _____

Concurrence By

☐ Telecon date _____ Time _____

☐ FAX/memo/e-mail attached

☐ In-person _____

Signature

Rocky Flats Environmental Technology Site

PRO-V60-HSP-34.06

REVISION 2

COMPENSATORY MEASURES AND FIRE WATCHES FOR FIRE PROTECTION SYSTEMS

Responsible Organization Fire Protection Engineering Effective Date 10/15/00

APPROVED BY Fire Protection Program Manager 10-2-00
Title Date

Bruce Campbell
Print Name

[Signature]
Approval Signature

N/A

Print Name of Responsible Manager (N/A if RM is Approval Authority)

The Responsible Manager Has Determined The Following Organization's Review Is Required. Review Documentation Is Contained In The Document History File

Engineering, Environmental, Safety, and Quality Programs
Fire Department
Fire Protection Engineering
Material Stewardship
Remediation, Industrial Building D&D, and Site Services Project
Strategic Planning and Integration
771/374-Closure Project
767-Closure Project
771-Closure Project
776/777-Closure Project

IMPORTANT NOTES

This procedure supersedes PRO-V60-HSP-34 06, Revision 1 and PRO-370-HSP-34 11, Revision 0

Periodic Review Frequency 4 years from the effective date

ISR Review SORC # 00-11 (9/27/00) SES/USDQ Review SES-RFP-00 2061-WGH

PADC-2000-03487

Reviewed for Classification/UCNI

By Lorna L. Dunn (u/vu)

Date 9-28-00

DCO Originator Bill Vandenberg *Bill Vandenberg* 3/10/02
Print Sign Date

Organization Fire Protection Engineering

Phone/Pager/Location 1136/2 1-198-5/1371C

Responsible Manager Bruce Campbell *Bruce Campbell* 5/14/02
Print Sign Date

Organization Fire Protection Engineering

Phone/Pager/Location 7642/212-6384/MV72

Assigned SME Dave Tomeck *Dave Tomeck* 05/14/02

Organization Fire Protection Engineering

Phone/Pager/Location 2585/MV72

Compensatory Measures and Fire Watches for Fire Protection Systems
Document Title

PRO-V60-HSP-34 06 Rev 2

Existing Document Number and Revision

N/A

New Document Number and Revision (if applicable)

Type of Document

- ☐ Policy ☒ Procedure (indicate type) ☐ Instruction
☐ Mgt Directive ☐ Technical ☐ Alarm ☐ Job Aid
☐ Manual ☒ Admin ☐ Other ☐ Other

If "Other" is checked, please specify type

Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Minor
☐ Revision ☒ Major
☐ Cancellation

Proposed Modification

Page 2, Update the LOEP
Page 3, Update the TOC
Page 4, delete first 2 paragraphs of Section 3 and change 3rd paragraph
Page 5, delete NOTE at the top
Page 10, change definition of Compensatory Measures for Fire Protection Engineering
Page 11, change definitions and delete NOTE after
Page 11A, add new page to support new definition
Page 16 and 17 change Title and Section 5.1
Page 17, change Sections 5.5 and 5.6
Page 18 and 19, correct title numbering
Page 21, change 2nd, 3rd, 4th and 5th bullets of Section 7.1
Page 22, change 4th and 8th dash
Page 23, change 3rd bullet of Section 7.2
Page 25, change 2nd paragraph of Section 8.1 and delete the 3rd paragraph
Page 26, change Step 8.1(4) & 8.1(5) and delete Step 8.1(5)(B) wording
Page 27, delete Performer and wording in Step 8.1(5)(C)
Page 28, change Step 8.1(5)(G)
Page 29, change Step 8.1(7) and 8.1(13)
Page 38, add new sentence after 1st
Page 40-46, change Appendix 3 thru Appendix 9
Page 47, change Appendix 10

Justification

- 1) Delete unnecessary information
- 2) Clarify roles and responsibilities
- 3) Bring document into conformance with Site Document Requirements Manual requirements that disallow changes of procedural steps without document modification (MAN-001-SDRM, Section 6.4.5)

External (Technical) Review

Reviewing Organization	Signature of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
Resp Mgr	<i>Bruce Campbell</i>	5/6/02	Material Stewardship	/s/	3/22/02
FPE-SME	<i>Dave Tomeck</i>	05/14/02	RISS	/s/	4/19/02
371/374 Closure Project	/s/	4/22/02	SP&I	/s/	4/29/02
707/776/777 Closure Project	/s/	4/30/02	ES&S	/s/	4/22/02
771 Closure Project	/s/	4/22/02			
ES&QP	/s/	4/10/02			

Special Reviews (NOTE: Other Special Reviews may be required. See PRO-815-DM-01 for more information.)

ISR (Number or "Not Required")

SISRC 02-08 (5/6/02)

Reviewed for Classification
(If Required, "N/A" if not)

By: N/A

Date

Approval (Completed to approve change and modification only. New documents and revisions are approved by signature on the document cover page.)

Approval Authority *Bruce Campbell* *Bruce Campbell* 5/14/02 Effective Date 5/15/02
Print Name Sign Date

DCF Originator Bill VandenBoogaard *[Signature]* 11/6/01
Print Sign Date

Organization Fire Protection Engineering

Phone/Pager/Location 4136/B130

Responsible Manager Bruce Campbell *[Signature]* 12/3/01
Print Sign Date

Organization Fire Protection Engineering

Phone/Pager/Location 7642/212-6384/B130

Assigned SME Dave Tomecek

Organization Fire Protection Engineering

Phone/Pager/Location 2585/303-439-0485/B130

Compensatory Measures and Fire Watches for Fire Protection Systems
Document Title

PRO-V60-HSP-34 06 Rev 2

Existing Document Number and Revision

N/A

New Document Number and Revision (if applicable)

Type of Document

- ☐ Policy ☒ Procedure (indicate type) ☐ Instruction
☒ Mgt Directive ☐ Technical ☐ Alarm ☐ Job Aid
☐ Manual ☒ Admin ☐ Other ☐ Other

If "Other" is checked, please specify type NA

Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Minor
☐ Revision ☒ Major
☐ Cancellation

Proposed Modification

Page 2, update the LOEP
Page 13, change the definition of Nuclear Material Hazards
Page 36, update References
Page 40, change Appendix 3
Page 42, change Appendix 5
Page 44, change Appendix 7

Justification

Update procedure
Make the procedure easier to understand and use

External (Technical) Review

Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
Resp Mgr	<i>[Signature]</i>	12/3/01			
Nuclear Safety	<i>[Signature]</i>	12/12/01			
FPE-SME	<i>[Signature]</i>	12/3/01			

Special Reviews (NOTE Other Special Reviews may be required See PRO-815-DM-01 for more information)

ISR (Number or "Not Required") SI SRC 02-03 (12-12-01)

TI Alignment (signature or N/A)

Sign

N/A

Date

Reviewed for Classification
(If Required, "N/A" if not)

By

N/A

Date

Approval (Completed to approve changes and cancellations only New documents and revisions are approved by signature on the document cover page)

Approval Authority

Print Name

Sign

12/3/01

Effective Date 12-20-01

APPENDIX 2
Document Change Form
(Page 1 of 2)

Page 1 of <u>2</u>		DOCUMENT CHANGE FORM (DCF)		DCF # DC-001	
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<p>DCF Originator Bill VandenBoogaard <i>[Signature]</i> <u>2/19/01</u> <small>Print Sign Date</small></p> <p>Organization <u>Fire Protection Engineering</u></p> <p>Phone/Pager/Location <u>4136/B130</u></p>	<p>Compensatory Measures and Fire Watches For Fire Protection Systems <small>Document Title</small></p> <p>PRO-V60-HSP-34 06 Revision 2 <small>Existing Document Number and Revision</small></p> <p>N/A <small>New Document Number and Revision (if applicable)</small></p>
--	--

<p>Responsible Manager Bruce Campbell <i>[Signature]</i> <u>2/19/01</u> <small>Print Sign Date</small></p> <p>Organization <u>Fire Protection Program Manager</u></p> <p>Phone/Pager/Location <u>7642/800-830-9853/B130</u></p>	<p><u>Type of Document</u></p> <p><input type="checkbox"/> Policy <input type="checkbox"/> Directive <input type="checkbox"/> Manual <input type="checkbox"/> Technical Standard</p> <p><input checked="" type="checkbox"/> Procedure <input type="checkbox"/> Instruction <input type="checkbox"/> Job Aid <input type="checkbox"/> Other <u> </u></p>
---	--

<p>Assigned SME Dave Tomecek <i>[Signature]</i> <u>2/19/01</u> <small>Print Sign Date</small></p> <p>Organization <u>Fire Protection Engineering Lead</u></p> <p>Phone/Pager/Location <u>2585/888-590-8522/B130</u></p>	<p><u>Type of Modification</u></p> <p><input type="checkbox"/> New <input checked="" type="checkbox"/> Change</p> <p><input type="checkbox"/> One Time Use Only <input type="checkbox"/> Minor</p> <p><input type="checkbox"/> Revision <input checked="" type="checkbox"/> Major <input type="checkbox"/> Cancellation</p> <p>Effective Date <u>5-1-01</u> Expiration Date <u> </u></p>
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<p>Proposed Modification</p> <ol style="list-style-type: none"> 1) Update the LOEP and TOC 2) Page 6, 3rd and 5th paragraph-Change to Project Fire Protection Engineering 3) Page 7, 5th box-Change to Project Fire Protection Engineering 4) Page 8, last paragraph-Change to Change to Project Fire Protection Engineering or Core Fire Protection Engineering 5) Page 9, 3 4, 3rd bullet-Change to Project Fire Protection Engineering 6) Page 10-Delete the Acronyms section and title of Section 4 and add a definition of Core Fire Protection Engineering 7) Page 13, Delete definition of Pre-Approved Decision Trees and add a definition of Project Fire Protection Engineering 8) Page 14, Change definition of SIO-DGP Panels and delete Acronyms section 9) Page 15, 5 1 first sentence-Change to Project Fire Protection Engineering 	<p>Justification</p> <p>Upgrade the procedure responsibilities, definitions, and Instructions section</p>
--	--

Reviewing Organization	Signature or Name of Reviewer	Date	Reviewing Organization	Signature or Name of Reviewer	Date
FPE	N/A	N/A	EES&QP	N/A	N/A
Material Stewardship	N/A	N/A	RISS	N/A	N/A
371/374-Closure Project	N/A	N/A	SPI	N/A	N/A
707-Closure Project	N/A	N/A			N/A
776/777-Closure Project	N/A	N/A			
771-Closure Project	N/A	N/A			

Approval Authority

[Signature: Bruce Campbell]

[Signature: Bill VandenBoogaard]

2-19-01
Date

PADC-2000-03487

DOCUMENT CHANGE FORM

Page 2 of 3

Page 2 of 2

DCF (continuation sheet)

DCF# DC-001

Document Title Compensatory Measures and Fire Watches for
Fire Protection Systems

Existing Document Number and Revision PRO-V60-HSP-34 06
Revision 2

Proposed Modification

Justification

- 10) Page 15, 5 1 7th sentence-Capitalize Compensatory Measures
- 11) Page 15, 5 1 11th sentence-Change "a Fire Watch" to
Compensatory Measures
- 12) Page 16 and 17-Retitle and change Section 5 4 to include Core,
Manager, and Project Fire Protection Engineering
- 13) Page 17-Delete the Impairment Coordinator responsibility and
renumber sections as required
- 14) Page 18 and 19-Delete the Personnel responsibility and
renumber sections as required
- 15) Page 21-Reword the first 2 paragraphs
- 16) Page 25-Change the first 2 paragraphs
- 17) Page 25, 8 1[2] 2nd bullet-Change to Project Fire Protection
Engineering
- 18) Page 26, 8 1[4][B]-Change to Project Fire Protection
Engineering
- 19) Page 26, 8 1[5][A]-Delete the NOTE after
- 20) Page 26, 8 1[5][B]-Change to Project Fire Protection
Engineering
- 21) Page 27, 8 1[5][C]-Change to Project Fire Protection
Engineering
- 22) Page 27, 8 1[5][E]-Change to Project Fire Protection
Engineering
- 23) Page 27, 8 1[5][F]-Change to Project Fire Protection
Engineering
- 24) Page 27, 8 1[5][F][1][a]-Add (Appendix 1, Block 15) at the
end
- 25) Page 27, 8 1[5][F][2]-Add (Appendix 1, Block 15) at the
end
- 26) Page 28, 1st paragraph [G]-Change to Project Fire Protection
Engineering
- 27) Page 29,-Change Step 8 1[7] and add Steps 8 1[8] thru 8 1[13]
- 28) Page 30, 8 2[5]-Change everything after Section 8 1, to read
"and the facility Authorization Basis documents "
- 29) Page 31, 8 2[10]-Change everything after Section 8 1, to read
"and the facility Authorization Basis documents "
- 30) Page 32, 8 3[2], 2nd and 3rd bullets-Change to Project Fire
Protection Engineering and Core Fire Protection Engineering
- 31) Page 32, 8 3[6]-Change everything after Section 8 1, to read
"and the facility Authorization Basis documents "
- 32) Page 33, 8 3[10]-Change everything after Section 8 1, to read
"and the facility Authorization Basis documents "
- 33) Page 34, 8 4[2], 2nd and 3rd bullets-Change to Project Fire
Protection Engineering and Core Fire Protection Engineering
- 34) Page 34, 8 4[6]-Change everything after Section 8 1, to read
"and the facility Authorization Basis documents "
- 35) Page 35, 8 4[10]-Change everything after Section 8 1, to read
"and the facility Authorization Basis documents "

See Page 1 of 2

LIST OF EFFECTIVE PAGES

<u>Pages</u>	<u>Effective Date</u>	<u>Pages</u>	<u>Effective Date</u>
1	10/15/00		
2-3	5/15/02		
4-5	10/15/00		
6	5/15/02		
7	5/1/01		
8	5/15/02		
9	5/1/01		
10-11	5/15/02		
11A	5/15/02		
12	10/15/00		
13	12/20/01		
14-15	5/1/01		
16-17	5/15/02		
18-19	5/15/02		
20	10/15/00		
21-23	5/15/02		
24	10/15/00		
25-29	5/15/02		
30-35	5/1/01		
36	12/20/01		
37	10/15/00		
38	5/15/02		
39	10/15/00		
40-47	5/15/02		

Total number of pages: 48

The following changes are active for this procedure:

DC-001

DC-02

DC-03

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1. PURPOSE

This procedure provides the instructions concerning Compensatory Measures and Fire Watches established as a result of Fire Protection System (FPS) impairments at Rocky Flats Environmental Technology Site (Site)

This procedure also provides the communication methodology for outages affecting the Site Fire Alarm System, Site Firewater System and other utilities

2. SCOPE

This procedure applies to all personnel and facilities at Rocky Flats

The use of a Fire Watch or other compensatory measure is a temporary action resulting from an FPS outage

A Fire Watch is not implemented to replace or be an equivalency to the impaired FPS, but they are used as a temporary compensatory measure to provide a reasonable level of protection

The term compensatory measures as used in this procedure is not used in the same context as in Nuclear Safety Evaluations (Unreviewed Safety Question Determinations)

This procedure does not define the Fire Watch requirements for Hot Work. The requirements and responsibilities for Fire Watchers relating to Hot Work are detailed in procedure PRO-W13-HSP-31 10, Hot Work

This procedure does not apply to Fire Alarm Systems that are monitored by off-site companies for a loss of alarm monitoring

This procedure supersedes PRO-V60-HSP-34 06, Revision 1 and PRO-370-HSP-34 11, Revision 0

3. OVERVIEW

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Compensatory Measures are established by completing Appendix 2, Compensatory Measures Decision Tree. If a Fire Watch is the desired Compensatory Measure, then Appendix 3 through Appendix 9 are to be used.

DC-03

A Fire Patrol is present within the time frame established by the selected periodicity. The established periodicity will be documented on the Fire Watch/Fire Patrol Briefing Form. Departures from routine are acceptable provided they comply with the requirements as specified in the Conduct of Operations manual. Each departure from routine is to be documented in the Fire Watch Log.

DC-01

If a decision is made to station a Fire Patrol in an affected area, a 4-hour frequency is initially established. The 4-hour frequency may be adjusted, unless controlled by the Authorization Basis, with concurrence by Project Fire Protection Engineering, depending upon the conditions in the area. Some situations may justify a more frequent Fire Patrol and some situations may allow for the frequency to be decreased. Some of the factors that could influence the frequency of a Fire Patrol include, but are not limited to, the following:

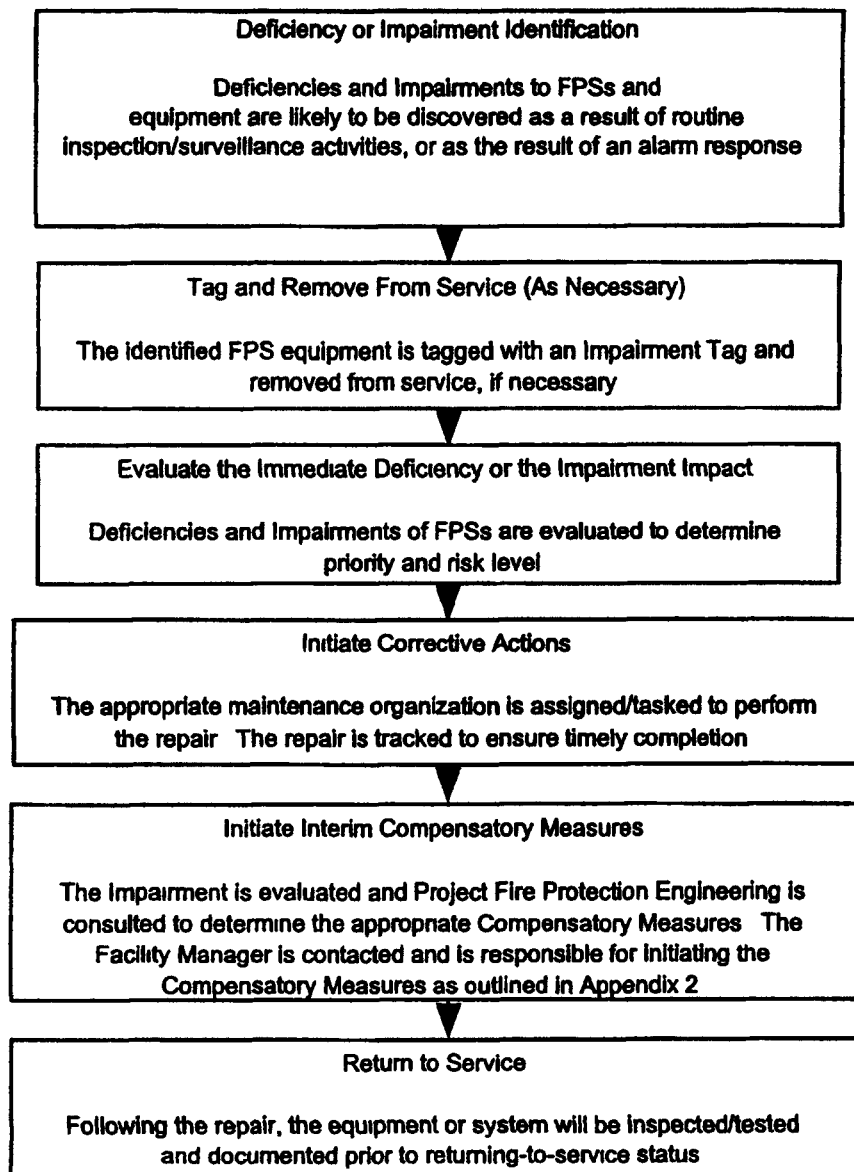
- The amount of combustible material in the area
- The status of fire protection systems in the area
- As Low As Reasonably Achievable (ALARA)
- Requirements of the Authorization Basis, if any

3. **OVERVIEW (continued)**

A Continuous Fire Patrol is required to be in the specified area 50 minutes of every hour. The Continuous Fire Patrol is intended to be a roving patrol over a large area. The 10 minute period provides a chance for rest or relief from duty, as necessary.

Figure 1, Process Flow Chart, provides a brief diagram of the Impairment/Deficiency and Compensatory Measures process for individual systems

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3. **OVERVIEW (continued)**

DC-03

A Continuous Fire Watch is stationed in the area of concern all of the time. Departures from routine are justified to investigate alarms or to report discrepancies to the Supervisor. Each departure from routine **SHALL** be documented in the Fire Watch Log. Departures **SHALL** be investigated by the Supervisor to ensure compliance with the intent of the Fire Watch.

Failures in signal transmission cables and equipment will result in a loss of alarm communication between the affected building fire alarm or Signal Input/Output (SIO) panels and their monitoring stations [Central Alarm Station (CAS), Secondary Alarm Station (SAS) or the Fire Dispatch Center (FDC)] The number and location of the affected buildings will depend on which alarm system (UNITY or Simplex) is affected, and the scope and location of the alarm outage.

Activation of an affected building's fire alarm device generally will be annunciated at a local fire alarm panel only, if one is installed. Automatic sprinkler systems will activate, however most are not locally monitored or annunciated. Special extinguishing systems (FM 200, Halon, CO₂) will activate and cause local annunciation, but no alarm transmission to the monitoring station will occur. As kitchen hood extinguishing systems are not monitored, their functions will not be affected.

Failures of the UNITY system can affect a single channel or multiple channels (Channels 1 through 4). Failures of the Simplex communications system can affect single or multiple panels within buildings and single or multiple buildings. The scope of the alarm outage will need to be determined at the time of the failure by Project Fire Protection Engineering or Core Fire Protection Engineering.

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3. OVERVIEW (continued)

Once the scope of the outage is determined, building specific or Sitewide announcements are made to notify the affected buildings so that Compensatory Measures can be implemented

If a failure of the Alarm System(s) occurs the following actions are taken:

- 1 The monitoring station (CAS or FDC) classifies the fault
- 2 The monitoring station (CAS Supervisor or Fire Dispatcher) notifies the Shift Superintendent and the Fire Department
3. The Shift Superintendent will authorize a Life Safety/Disaster Warning (LS/DW) announcement or make radio/telephone notification to inform the affected buildings of the condition and to initiate the necessary Compensatory Measures
- 4 Facility Management will
 - Contact Fire Dispatch for a list of affected areas
 - Initiate the appropriate Compensatory Measures as defined in Section
 - Contact Project Fire Protection Engineering for any additional guidance.
- 5 Fire Dispatch will contact the appropriate Facility Management in both occupied and non-occupied buildings with the list of the affected areas

DC-001

DC-001

4. DEFINITIONS

4.1 Definitions

Affected Area A physical enclosure, space, or piece of equipment that requires protection by an operable fire detection or suppression system

Alarm. A system assessment and annunciation of an off-normal condition in a component or components of the Security Computer System.

Central Alarm Station (CAS). Is comprised of the primary plant alarm computer and operator's console. CAS transmits and receives alarm/Supervisory signals from the Unity System.

Channel. Electronic communications loop between the Security Computer System and designated Signal In/Out (SIO)/Data Gathering Panel (DGP) panels. A channel consists of coax cables (called TRIAX) and SIO-DGP panels. There are four channels used at Rocky Flat

Compensatory Measures In relation to Fire Protection Systems, temporary actions or conditions implemented to provide an alternative means to achieve an acceptable level of safety normally afforded by Fire Protection Systems. Compensatory Measures are not considered corrective actions. Compensatory Measures, as defined within this document, are only considered Compensatory Actions, as defined in Authorization Basis documents, when this document is recognized by the Authorization Basis document.

DC-003

Core Fire Protection Engineering. The personnel included within the Fire Protection Programs section under Kaiser-Hill Safety, Engineering and Quality Programs. This organization includes the Site Fire Protection Program Manager (Authority Having Jurisdiction). Members performing functions under this procedure must be Qualified as Designers (Fire Protection), as a minimum, in accordance with 1-V51-COEM-DES-210, Site Engineering Process Procedure

Fire Dispatch Center (FDC). A dispatch location dedicated solely to fire monitoring and control functions of the Unity System. Control equipment consists of an operator's console. The FDC relies upon the primary and secondary alarm computers in CAS and the Secondary Alarm Station (SAS) for system interface capabilities

4.1 Definitions (continued)

Fire Patrol Route The route, of the affected area, traveled by the Fire Watcher

Fire Watch The act of observing field conditions which are indicators of incipient stage fire development and initiating specified actions to mitigate the situation. The types of Fire Watches are as follows

Continuous Fire Watch—The placement of personnel at a stationary location to continuously observe an affected area without interruption. Area turnover shall be conducted at the stationary location, and breaks are allowed only when personnel have been relieved by another Continuous Fire Watch. For conditions where the affected area constitutes the entire coverage area of a system (e.g., sprinkler riser outage, lost power to a fire alarm control panel, etc), a recognized sub-division of a system (e.g., portion of a sprinkler system controlled by a sectional valve, a single zone of a fire detection or alarm system, etc), or more than 3 rooms, a Continuous Fire Patrol (see definition below) is considered equivalent to a Fire Watch

Fire Patrol—A Fire Patrol will be assigned to observe an area on an assigned frequency. The initial frequency is established at 4-hours, but the frequency can be adjusted as allowed by Appendices 3-9, and with Project Fire Protection Engineering (FPE) concurrence, if the conditions in the area warrant. Some situations may justify a more frequent Fire Patrol and some situations may allow for the frequency to be decreased. Some of the factors that could influence the frequency of a Fire Patrol include, but are not limited to, the following

- The amount of combustible material in the area.
- The status of fire protection systems in the area
- As Low As Reasonably Achievable (ALARA)
- Requirements of the Authorization Basis, if any.

The observation frequency will be determined by supervision, concurred with by FPE and documented on the Fire Watch/Fire Patrol Briefing Form.

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4.1 Definitions (continued)

Established Frequency

Up to and including 2 hour

Greater than 2 hour less than 8 hour

8 hour or more

Time For Performance

15 minutes prior to and 15 minutes after

30 minutes prior to and 30 minutes after

60 minutes prior to and 60 minutes after

Examples are provided below for clarity.

DC-03

Nominal 1 Hour Fire Patrol Start Time (first Patrol) - 11:00		Nominal 2 Hour Fire Patrol Start Time (first Patrol) - 08:00		Nominal 4 Hour Fire Patrol Start Time (first Patrol) - 14:30		Nominal 8 Hour Fire Patrol Start Time (first Patrol) - 02:00	
Nominal Patrol Time	Time For Performance	Nominal Patrol Time	Time For Performance	Nominal Patrol Time	Time For Performance	Nominal Patrol Time	Time For Performance
12:00	11:15 to 12:15	10:00	09:45 to 10:15	18:30	18:00 to 19:00	10:00	09:00 to 11:00
13:00	12:15 to 13:15	12:00	11:45 to 12:15	22:30	22:00 to 23:00	18:00	17:00 to 19:00
14:00	13:15 to 14:15	14:00	13:45 to 14:15	02:30	02:00 to 03:00	•	•
15:00	14:15 to 15:15	16:00	15:45 to 16:15	06:30	06:00 to 07:00	•	•
16:00	15:15 to 16:15	18:00	17:45 to 18:15	10:30	10:00 to 11:00	•	•
•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•

The schedule noted above does not preclude performing a Fire Patrol early in the nominal period and re-adjusting the schedule based on the early performance (e.g., performing a required 09:00 Fire Patrol at 08:00 then adjusting the nominal Patrols to 12:00, 16:00, 20:00, etc.). This process does not, however, allow re-adjusting the schedule for patrols performed in the latter portion of the Time for Performance. For example, a nominal 8 hour Fire Patrol performed at 09:00 instead of 08:00 is not allowed to be re-adjusted to 17:00 – it must remain at 16:00

4.1 Definitions (continued)

Continuous Fire Patrol—The Continuous Fire Patrol will be stationed to monitor areas larger than one room that warrant more frequent observation. The affected area is toured continuously 50 minutes out of each hour. Typically a Continuous Fire Patrol is stationed when general area fire detection or sprinkler systems are impaired. For example, if an entire glovebox line has impaired fire detection a Continuous Fire Patrol would be appropriate.

Long-Term Fire Watch—A Fire Watch that extends beyond a seven day period.

Fire Watcher. An individual assigned the duties of a Fire Watch or Fire Patrol.

Fire Watch/Fire Patrol Briefing Form. A form, completed by Facility Management, that delineates the specific requirements of the Fire Watch. The Fire Watch/Fire Patrol Briefing Form

- Establishes the baseline for changes in observed conditions
- Is issued by Facility Management
- Outlines the requirements of the Fire Watch
- Documents the Fire Watch periodicity
- Identifies the Fire Watch expectations
- Must be signed by the actual Fire Watchers to indicate full understanding of the Fire Watch requirements
- Is required for each Fire Watch

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4.1 Definitions (continued)

Fire Watch Log. A written, chronological, event log maintained by the Fire Watcher, to record the activities that occur during the time that a Fire Watch is stationed. The following are a few examples of entries that should be made into the Fire Watch Log

- Any departure from routine
- Any alarms or important building announcements
- Any injuries or illnesses
- Any occurrences that affect the normal routine of the Fire Watch as specified on the Fire Watch/Fire Patrol Briefing Form

Hazard/Hazardous. Capable of posing an unreasonable risk to health, safety, or the environment, capable of causing harm

Incipient Stage Fire. Defined as the start of a fire during which time there is no active flaming. The fire may be smoldering for several hours

DC 001

Nuclear Material Hazards. For the purpose of this procedure, a nuclear material hazard is defined as the presence of those materials defined as Nuclear Materials in MAN-T91-STSM-001, Site Transportation Safety Manual, in quantities of one gram or more. Holdup and fixed contamination, including that associated with, but not limited to, ducts, gloveboxes, lathes, and conveyors, **SHALL** be included as part of the determination of the presence of Nuclear Material

DC 002

Project Fire Protection Engineering. The personnel performing fire protection engineering functions for the individual Site Projects (i.e., Material Stewardship and Offsite Shipment, 371/374 Closure Project, 707 Closure Project, 771 Closure Project, 776/777 Closure Project, and Remediation, Industrial Building D&D & Site Services Project). Members performing functions under this procedure must be Qualified as Designers (Fire Protection), as a minimum, in accordance with 1-V51-COEM-DES-210

DC 001

Secondary Alarm Station (SAS). An alternate dispatch location comprised of secondary (stand-by) Unity System and operator's console. The SAS transmits and receives alarm/Supervisory signals from the plant alarm system should the central station malfunction

4.1 Definitions (continued)

DC-001

SIO-DGP Panels. SIO is a Rocky Flats engineering designation for the Honeywell Data Gathering Panel. SIO-DGP panels monitor and control the remote fire equipment under the direction of the Unity System. When electronically interrogated, the SIO/DGP transmits the operational status of remote fire monitoring equipment to the Unity System.

Toxic Hazard. Chemicals in quantities exceeding the thresholds given in Appendix A to 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals or as determined on an individual basis by Industrial Hygiene.

DC-001

5. RESPONSIBILITIES

5.1 Facility Management

DC-001

Coordinates the determination of Compensatory Measures with Project Fire Protection Engineering

Approves the processes associated with Compensatory Measures and Fire Watches.

Ensures that the proper equipment is used and procedures are followed

Ensures that the Supervisors and Fire Watchers are properly trained in the use of this procedure

Ensures that contractors comply with all established programs

Ensures that Fire Watchers are aware of any hazardous conditions

DC-001

Initiates the approved Compensatory Measures for the situation

Completes the Compensatory Measures Determination Form

Completes the Fire Watch/Fire Patrol Briefing Form, when applicable.

Obtains Project Fire Protection Engineering concurrence for Compensatory Measures when required

DC-001

Grants approval to terminate Compensatory Measures with Project Fire Protection Engineering concurrence Termination may only be granted by the Facility Manager, or their designee

Contacts Fire Dispatch in the event of a Site Fire Alarm System outage or a Site Fire Water outage to determine the affected areas.

Contacts Utilities in the event of a Site Utility outage to determine the affected areas.

5.2 CAS Supervisor

Notifies the Fire Department and Shift Superintendent in the event of a Site Fire Alarm System outage.

Makes LSW System announcements at the direction of the Shift Superintendent in the event of a Site Fire Alarm System outage, Site Fire Water outage, or a Site Utility outage affecting Fire Protection Systems, when necessary.

5.3 Fire Dispatcher

Notifies the CAS Supervisor and Shift Superintendent in the event of a Site Fire Alarm System outage or a Site Fire Water outage.

Provides the affected buildings with information in the event of a Site Fire Alarm System outage or a Site Fire Water outage.

Logs the Site Fire Alarm System outages and Site Fire Water outages in the Daily Activity Log.

5.4 Fire Protection Engineering (Core and Project)

Core Fire Protection Engineering

Approves and provides written results of evaluations for long-term, more than 1 month Fire Watches to the Facility Manager.

Tracks open Compensatory Measures

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5.4 Fire Protection Engineering (Core and Project) (continued)

Project Fire Protection Engineering

Provides concurrence or a written response to the Facility Manager for a Fire Watch or Compensatory Measures when required

DC-001

Evaluates the use of long-term Fire Watches, approves long-term, less than 1 month Fire Watches and submits evaluations for long-term, more than 1 month Fire Watches to Core Fire Protection Engineering for approval

Provides concurrence or a written response to the Facility Manager for closure of a Fire Watch or Compensatory Measures.

DC-03

5.5 Fire Protection Program Manager

Provides approval to conduct Hot Work activities in areas with impaired Fire Protection Systems

Provides approval to downgrade a Continuous Fire Watch to a Fire Patrol as identified in Appendices 3-9

DC-03

5.6 Fire Watcher

SHALL

- In conjunction with the Supervisor, conduct a baseline area inspection to document the initial conditions present in the area to be monitored. The results of the baseline area inspection are to be documented on the Fire Watch/Fire Patrol Briefing Form
- Fully understand all written instructions presented on the Fire Watch/Fire Patrol Briefing Form

5.6 **Fire Watcher (continued)**

- Request assistance from the Supervisor if discrepancies are discovered.
- Have the approval of the Supervisor to perform as a Fire Watcher
- Immediately notify the Supervisor upon discovery of a fire or an unsafe condition that would preclude performance of the Fire Watch.
- Perform the designated duties as long as conditions remain as outlined in the Fire Watch/Fire Patrol Briefing Form
- Remain fully cognizant of the job responsibilities.

Follows the instructions in this procedure, Fire Watch/Fire Patrol Briefing Form, and the specific building or area procedures.

5.7 **Shift Superintendent**

Authorizes I S/DW announcements or makes radio/telephone notification to the affected buildings in the event of a Site Fire Alarm System outage, a Site Fire Water System outage and other Site Utility outages affecting the Fire Protection Systems

5.8 **Supervisor**

Conducts a baseline area inspection to determine and document the initial conditions in the area to be monitored.

Briefs the Fire Watcher on the specific requirements and hazards of the job

5.8 Supervisor (continued)

Ensures that all of the Fire Watch instructions are written on the Fire Watch/Fire Patrol Briefing Form

Determines if there are any combustible materials present in the area.

Ensures that the Fire Watchers:

- Are briefed on the responsibilities and requirements of the job.
- Understand the applicable emergency procedures.
- Perform the assigned tasks.

Verifies that the Fire Watches are in place.

Investigates departures from the Fire Watch routine

5.9 Utilities

Notifies the Fire Department and Shift Superintendent in the event of a Site Fire Water outage or the Site Utility System outages that may affect Fire Systems (steam, air, nitrogen electrical etc)

6 LIMITATIONS AND PRECAUTIONS

- A Fire Watch must be clearly defined, in writing, to ensure success at minimizing the risk of fire. Explicit instructions must be written in a manner that promotes compliance.
- Fire Watches must be trained in accordance with this procedure and any other building-specific fire watch procedures.
- Fire Watches must meet the requirements of any posted Radiological Work Permits (RWPs) and adhere to the requirements for touring through an area if it is posted for required respiratory protection or special personnel protective clothing.
- To comply with the intent of the As Low As Reasonably Achievable (ALARA) Program, all personnel shall apply the principles of time, distance, and shielding.

7. REQUIREMENTS

7.1 General Requirements

- IF Compensatory Measures are being established as the result of a Fire Protection System Impairment or Deficiency,
THEN the Facility Manager **SHALL** implement actions in accordance with PRO-N20-HSP-34.01.
- In the case of any discrepancy between the requirements of this procedure and the facility Authorization Basis documents, the most restrictive requirements **SHALL** take precedence. IF the Authorization Basis is more restrictive, THEN the process specified in Section 8 of this procedure **SHALL** still be implemented using the Authorization Basis specified actions or measures
- The area(s) to be checked by the Fire Watcher **SHALL** be determined by the Supervisor and **SHALL** be explained to the Fire Watcher via a pre-evolution briefing and the Fire Watch/Fire Patrol Briefing Form
- Facility Management or designee **SHALL** track open Compensatory Measures
- All the following actions **SHALL** be evaluated when determining compensatory measures
 - Hazardous operations are terminated
Hazardous operations should not continue with fire protection out of service All ignition sources should be eliminated. If possible, schedule work during idle periods when fewer ignition hazards could be present.
 - Affected area(s) are evacuated. Reduce or restrict the occupancy of the area affected by the Impairment to lessen the personnel exposure and lessen the chance of changes in conditions or hazards

7.1 General Requirements (continued)

- Red tag alert system is used. Attach a Red Tag (see PRO-N20-HSP-34 01) to each closed valve to serve as a reminder that the valve is closed. Keep a written record of the closed valve as a reminder that the valve must be reopened
- Personnel are stationed at the system control or valve. Station personnel at the closed fire system control valve(s) ready to open it in case of fire.
- Fire Department is notified. Notify the Fire Department so that they are aware of what fire protection system(s) and/or water supplies are not in service
- 88 | - Continuous repair work is authorized. Work without interruption until completion. Do not leave fire protection out of service any longer than necessary
- Fire Watch is initiated. Assign Fire Watchers to monitor the areas where fire protection is out of service
- Temporary supplies are used. Provide temporary connections to water or power supplies and provide extra portable fire extinguishing equipment in areas where protection is out of service
- Instituting smoking restrictions.
- DC-03 | - Cutting and welding is prohibited. Cutting and welding are a significant cause of fires during fire protection system outages. All Hot Work SHALL, unless written approval is provided by the Fire Protection Program Manager, be suspended until fire protection is restored.
- Repair equipment is on-hand. Have everything ready before closing any valves. Workers, materials, and tools should be on-hand and all excavations completed. Provide plugs or caps to enable open pipe ends to be closed quickly in case of fire
- Fire hose is laid. Lay out hose lines to be ready in case of fire. Provide charged hose lines to temporarily feed sprinkler systems where the supply mains have been closed.

7.2 Fire Watcher Requirements

- Fire Watchers **SHALL**
 - Understand the specific nature of the fire system impairment or deficiency and the specific area(s) affected
 - Monitor all areas affected by the fire system impairment.
- The Fire Watcher **may not** perform other duties while performing the duties of a Fire Watch. However this does not preclude performance of other duties in-between rounds of a Fire Patrol
- Facility Management **SHALL** instruct the Fire Watchers in the following:
 - Frequency of tours
 - Existing fire hazards including flammable and combustible materials, approved hazardous operations, etc
 - Appropriate emergency procedures and actions
 - Methods of sounding an alarm both in the building and to CAS/FDC
 - Procedure for manually activating fire suppression systems when specifically defined on the Fire Watch/Fire Patrol Briefing Form
 - Methods of recording the conduct of tours
 - Other pertinent information in the Fire Watch Log
 - Identification of changes in conditions of affected areas

DC-03

7.3 Fire Watch Log

- A log or other documentation system SHALL be established and used to provide an auditable record of compliance with the requirements of this procedure. The log or other documentation SHALL include, but not be limited to the following:
 - Time and date of fire watch activation and termination
 - Facility/building, and area under the facility fire watch
 - Nature of the fire protection impairment
 - Date of the first fire protection impairment
 - Dates and frequency of the facility fire watch
 - Signatures of personnel performing the facility fire watch
 - Date of fire protection impairment restoration

8. INSTRUCTIONS

8.1 Individual System Impairments

DC-001 The fire protection system **SHALL** be returned to service within the required time frames specified in PRO-N20-HSP-34 01 Utilizing Compensatory Measures is not equivalent to having operational fire protection systems.

DC-001 DC-03 Project Fire Protection Engineering **SHALL** be consulted if the decision trees (Appendices 2 through 9) do not provide an answer for a specific situation. Project Fire Protection Engineering will assist in the decision making process with respect to the Compensatory Measures that are required.

Facility Management

[1] Complete Appendix 1, Compensatory Measures Determination Form using the decision tree in Appendix 2, Compensatory Measures Decision Tree, upon notification of a fire protection system Impairment.

[2] Determine the impact of the loss of protection for each type of system.

Several of the following disciplines may be solicited to participate in this determination.

- Fire Department
- DC-001 • Project Fire Protection Engineering
- Shift Superintendent
- Utilities Management
- Alarms Surveillance
- Nuclear Safety
- Area Maintenance
- Fire System Services

The selected disciplines listed above assist in determining the compensatory measures required based on the size, layout, and level of the Impairment.

8.1 Individual System Impairments (continued)

[3] Check (✓) the required compensatory measures on Block 11 of Appendix 1

DC-03
DC-001

[4] IF a Fire Watch or Fire Patrol is not a desired compensatory measure,
THEN:

[A] Initiate the compensatory measures within 1 hour

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[B] Submit Appendix 1 to Project Fire Protection Engineering

DC-03

[5] IF a Fire Watch or Fire Patrol is a desired compensatory measure,
THEN:

[A] Go to one of the following decision trees, as applicable, to determine the
level of Fire Watch required

- Appendix 3, Glovebox Overheat Ceiling Probe System Decision Tree
- Appendix 4, Glovebox Contact Heat Detection System Decision Tree
- Appendix 5, Automatic Fire Sprinkler System Decision Tree
- Appendix 6, Filter Plenum Fire Protection Decision Tree
- Appendix 7, Fire Detection System Decision Tree.
- Appendix 8, Fire Door/Wall/Barrier Decision Tree.
- Appendix 9, Special Extinguishing Systems.

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DC-03

8.1 Individual System Impairments (continued)

DC-03

- [D] Initiate the compensatory measures within 1 hour of the discovered condition

DC-001

- [E] Submit Appendix 1 to Project Fire Protection Engineering.

Project Fire Protection Engineering

- [F] Perform a Collective Significance Review in accordance with PRO-N20-HSP-34.01.

- [1] IF a Collective Significance is found,
THEN:

DC-001

- [a] Check (✓) Yes on the Compensatory Measures Determination Form (Appendix 1, Block 15)
- [b] Initiate actions in accordance with PRO-N20-HSP-34.01
- [c] Modify the Compensatory Actions and/or Fire Watch as required

DC-001

- [2] IF no Collective Significance is found,
THEN check (✓) No on the Compensatory Measures Determination Form (Appendix 1, Block 15)

8.1 Individual System Impairments (continued)

Facility Management

DC-001

DC-03

- [C] IF Project Fire Protection Engineering has modified the Compensatory Measures Determination Form,
THEN implement the revised Compensatory Measures within 1 hour of receiving the modified Compensatory Measures Determination Form
- [I] Complete Appendix 10, Fire Watch/Fire Patrol Briefing Form.
- [I] Determine, by performing a baseline area inspection, the checkpoints to be inspected or routes to be followed to ensure coverage of the affected area and observation of the hazards are adequate.
- [I] Determine the method(s) to notify the Fire Dispatch Center in event of an emergency
- Acceptable methods include, but are not limited to
- Fire Phones
 - Telephone (X2911 for emergency or X2914 for non-emergency)
 - Manual pull stations
 - Portable radios
- [K] Determine relief teams and intervals for the Fire Watchers.
- [L] Establish documentation requirements or check-off lists for larger affected areas to ensure effective monitoring
- [M] Initiate a pre-evolution briefing/job task briefing to be held before posting the Fire Watch to ensure that the established requirements are followed.

Fire Watcher

- [N] Notify the Supervisor of a change in condition

8.1 Individual System Impairments (continued)

Facility Management

- [0] Reevaluate the compensatory measures based on the changed condition using the appropriate decision tree(s).

DC-03

- [7] Submit the Compensatory Measures Determination Form to Core Fire Protection Engineering for tracking
- [8] WHEN it is determined that the Compensatory Measures are no longer required,
THEN request concurrence from Project Fire Protection Engineering to terminate the Compensatory Measures

Project Fire Protection Engineering

- [9] Review the closure information
- [10] IF the closure information is acceptable,
THEN concur with the termination of Compensatory Measures
- [11] IF the closure information is not acceptable,
THEN provide Facility Management with the necessary steps to obtain concurrence

Facility Management

- [12] WHEN concurrence has been obtained,
THEN terminate the Compensatory Measures and complete the Compensatory Measures Determination Form

DC-03

- [13] Submit the Compensatory Measures Determination Form to Core Fire Protection Engineering for tracking and trending

8.2 Actions and LS/DW Announcements For Site Fire Alarm System Outages

CAS Supervisor or Fire Dispatcher

- [1] IF an outage condition is determined to exist,
THEN notify the following
- Shift Superintendent
 - Fire Department
 - CAS

CAS Supervisor

- [2] IF the Shift Superintendent cannot be contacted,
THEN make the LS/DW announcement of Step [3] after notifying the Fire
Department

Shift Superintendent or designee

- [3] Make the following LS/DW announcement.

**May I have your attention please. The fire alarm system is impaired.
Compensatory Measures may be required. Designated Facility Management
is to contact Fire Dispatch at X4336 for the affected areas.**

Facility Management

- [4] Contact Fire Dispatch for a list of the affected areas
- [5] Initiate the appropriate Compensatory Measures in accordance with Section 8 1,
and the facility Authorization Basis documents

Fire Dispatch

- [6] Contact Facility Management of the affected buildings (occupied and non-
occupied) with the affected coverage areas in accordance with 3-FD-SOI-911,
Monitoring Fire Alarms

**8.2 Actions and LS/DW Announcements For Site Fire Alarm System Outages
(continued)**

[7] Log the fire alarm outage in the Daily Activity Log.

CAS Supervisor or Fire Dispatcher

[8] **WHEN** the fire alarm system is restored to normal,
THEN:

[A] Ensure the following are notified

- Shift Superintendent
- Fire Department
- CAS

[B] Log the situation in the Daily Activity Summary

Shift Superintendent/CAS Supervisor

[9] Make an LS/DW announcement appropriate for the conditions.

Facility Management

[10] **WHEN** notification is received that the fire alarm system has been returned to normal,
THEN cancel the Compensatory Measures in accordance with Section 8.1, and the facility Authorization Basis documents

8.3 Actions and LS/DW Announcements For Site Fire Water Outages

Utilities

- [1] IF an outage condition is determined to exist,
THEN notify the following
- Shift Superintendent
 - Fire Department

Shift Superintendent or designee

- [2] Determine the extent of the outage relative to fire protection systems with assistance from any or all of the following
- Fire Department
 - Project Fire Protection Engineering
 - Core Fire Protection Engineering
 - Utilities
 - Fire System Services

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Fire Dispatch

- [3] IF (3) buildings or less are affected by the outage, THEN contact Facility Management of the affected buildings (occupied and non-occupied) in accordance with 3-FD-SOI-911, Monitoring Fire Alarms.

Shift Superintendent or designee

- [4] IF more than three (3) buildings are affected by the outage,
THEN notify the affected buildings by radio/telephone and make the following LS/DW announcement

**May I have your attention please. The fire water system is impaired.
Compensatory Measures may be required. Designated Facility Management
is to contact Fire Dispatch at X4336 for the affected areas.**

Facility Management

- [5] Contact Fire Dispatch for a list of the affected areas

8.3 Actions and LS/DW Announcements For Site Fire Water Outages (continued)

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- [6] Initiate the appropriate Compensatory Measures in accordance with Section 8 1, and the facility Authorization Basis documents

Fire Dispatch

- [7] Log the fire water outage in the Daily Activity Log

Utilities

- [8] **WHEN** the fire water system is restored to normal,
THEN:

- [A] Ensure the following are notified:

- Shift Superintendent
- Fire Department

- [B] Log the situation in the Daily Activity Summary

Shift Superintendent or designee

- [9] Make an LS/DW announcement appropriate for the conditions or notify the affected buildings via radio/telephone

Facility Management

- [10] **WHEN** notification is received that the fire water system has been returned to normal,
THEN cancel the Compensatory Measures in accordance with Section 8 1, and the facility Authorization Basis documents

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8.4 Actions and LS/DW Announcements For Site Utility Outages Affecting Fire Protection Systems

Utilities

- [1] IF an outage condition is determined to exist,
THEN notify the following
- Shift Superintendent
 - Fire Department

Shift Superintendent or designee

- [2] Determine the extent of the outage relative to fire protection systems with assistance from any or all of the following
- Fire Department
 - Project Fire Protection Engineering
 - Core Fire Protection Engineering
 - Utilities
 - Fire System Services

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Fire Dispatch

- [3] IF (3) buildings or less are affected by the outage, THEN contact Facility Management of the affected buildings (occupied and non-occupied) in accordance with 3-FD-SOI-911, Monitoring Fire Alarms

Shift Superintendent or designee

- [4] IF more than three (3) buildings are affected by the outage,
THEN notify the affected buildings by radio/telephone and make the following LS/DW announcement:

May I have your attention please. The Site Utility system is impaired. Compensatory Measures may be required. Designated Facility Management is to contact Fire Dispatch at X4336 for the affected areas.

Facility Management

- [5] Contact Fire Dispatch for a list of the affected areas

8.4 Actions and LS/DW Announcements For Site Utility Outages Affecting Fire Protection Systems (continued)

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- [6] Initiate the appropriate Compensatory Measures in accordance with Section 8 1, and the facility Authorization Basis documents

Fire Dispatch

- [7] Log the Site Utility system outage in the Daily Activity Log

Utilities

- [8] **WHEN** the Site Utility system is restored to normal,
THEN:

- [A] Ensure the following are notified

- Shift Superintendent
- Fire Department

- [B] Log the situation in the Daily Activity Summary.

Shift Superintendent or designee

- [9] Make an LS/DW announcement appropriate for the conditions or notify the affected buildings via radio/telephone

Facility Management

- [10] **WHEN** notification is received that the Site Utility system has been returned to normal,
THEN cancel the Compensatory Measures in accordance with Section 8 1, and the facility Authorization Basis documents

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9. RECORDS

The following documents are initiated, processed, or maintained as a result of this procedure and **SHALL** be processed as follows

Record Identification	Record Type Determination	Protection/Storage Methods	Processing Instructions
1 Appendix 1, Compensatory Measures Determination Form 2 Appendix 10, Fire Watch/Fire Patrol Briefing Form 3 Fire Watch Log 4 Daily Activity Summary	QA Record (Non-WIPP/LL/LLM)	Responsible Managers SHALL implement a reasonable level of protection to prevent loss or degradation. Responsible Manager should define specific protection and storage methods for the records as defined in 1-V41-RM-001. Records Management Guidance for Records Sources. It is recommended that the Responsible Manager work with the Site Records Management organization to assure reasonable controls are being maintained.	When inactive (as defined in 1-V41-RM-001), then transfer to Site Records Management in accordance with 1-V41-RM-001.

10. REFERENCES

FM Loss Prevention Sheet 9-1, Supervision of Property

FM Technical Advisory Bulletin 9-1, Supervision of Property

MAN-066-COOP, Site Conduct of Operations Manual

NFPA 601, Standard for Security Services in Loss Prevention

PRO-N20-HSP-34 01, Fire Systems Impairments and Deficiencies

1-V41-RM-001, Records Management Guidance for Records Sources

29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals

3-FD-SOP-902, Daily Activity Log

3-FD-SOP-934, Radio and Alarm Communication Outages

MAN-T91-STSM-001, Site Transportation Safety Manual

COMPENSATORY MEASURES
AND FIRE WATCHES FOR FIRE
PROTECTION SYSTEMS

10/15/00

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APPENDIX 1
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COMPENSATORY MEASURES DETERMINATION FORM

1 Impairment No	2 Building	3 Date	4 Time
5 Impairment Classification (from PRO-N20-HSP-34 01)			
<input type="checkbox"/> Status Code A <input type="checkbox"/> Status Code C			
6 Alarm Delta No		7 IWCP No	
8 System Type		9 Equipment ID	
10 Affected areas/Process/Equipment.			
11 Required Compensatory Measure			
a <input type="checkbox"/> Hazardous operations terminated e <input type="checkbox"/> Fire Watch i <input type="checkbox"/> Fire Department notified b <input type="checkbox"/> Affected area(s) evacuated f <input type="checkbox"/> Temporary supplies used j <input type="checkbox"/> Repair equipment on-hand c <input type="checkbox"/> Red tag alert system used g <input type="checkbox"/> Cutting and welding proh k <input type="checkbox"/> Continuous work authorized d <input type="checkbox"/> Personnel stationed at the system control or valve h <input type="checkbox"/> Smoking restricted l <input type="checkbox"/> Fire hose laid			
12 Basis for Fire Watch determination			
<input type="checkbox"/> Appendix 3 <input type="checkbox"/> Appendix 4 <input type="checkbox"/> Appendix 5 <input type="checkbox"/> Appendix 6 <input type="checkbox"/> Appendix 7 <input type="checkbox"/> Appendix 8 <input type="checkbox"/> Appendix 9 <input type="checkbox"/> Specific Building or Area <input type="checkbox"/> AB Requirement			
13 Type of Fire Watch/Fire Patrol			
<input type="checkbox"/> Continuous Fire Watch <input type="checkbox"/> Continuous Fire Patrol <input type="checkbox"/> Fire Patrol Frequency _____			
13a Basis for Compensatory Measure determination			
14 Areas to be monitored			
15 Authorization (Shift Mgr /Fac Mgr)		FPE Collective Significance Review	FPE Concurrence
Print Name _____ Phone/Pager/FAX _____ Signature _____		<input type="checkbox"/> YES <input type="checkbox"/> NO _____ Initial	_____ Initial
16 Basis for Termination			
17 Authorization (Shift Mgr /Fac Mgr)			FPE Concurrence
Print Name _____ Phone/Pager/FAX _____ Signature _____			_____ Initial
18 Compensatory Measures terminated		Date	Time

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**INSTRUCTIONS FOR COMPLETING THE COMPENSATORY MEASURES
DETERMINATION FORM**

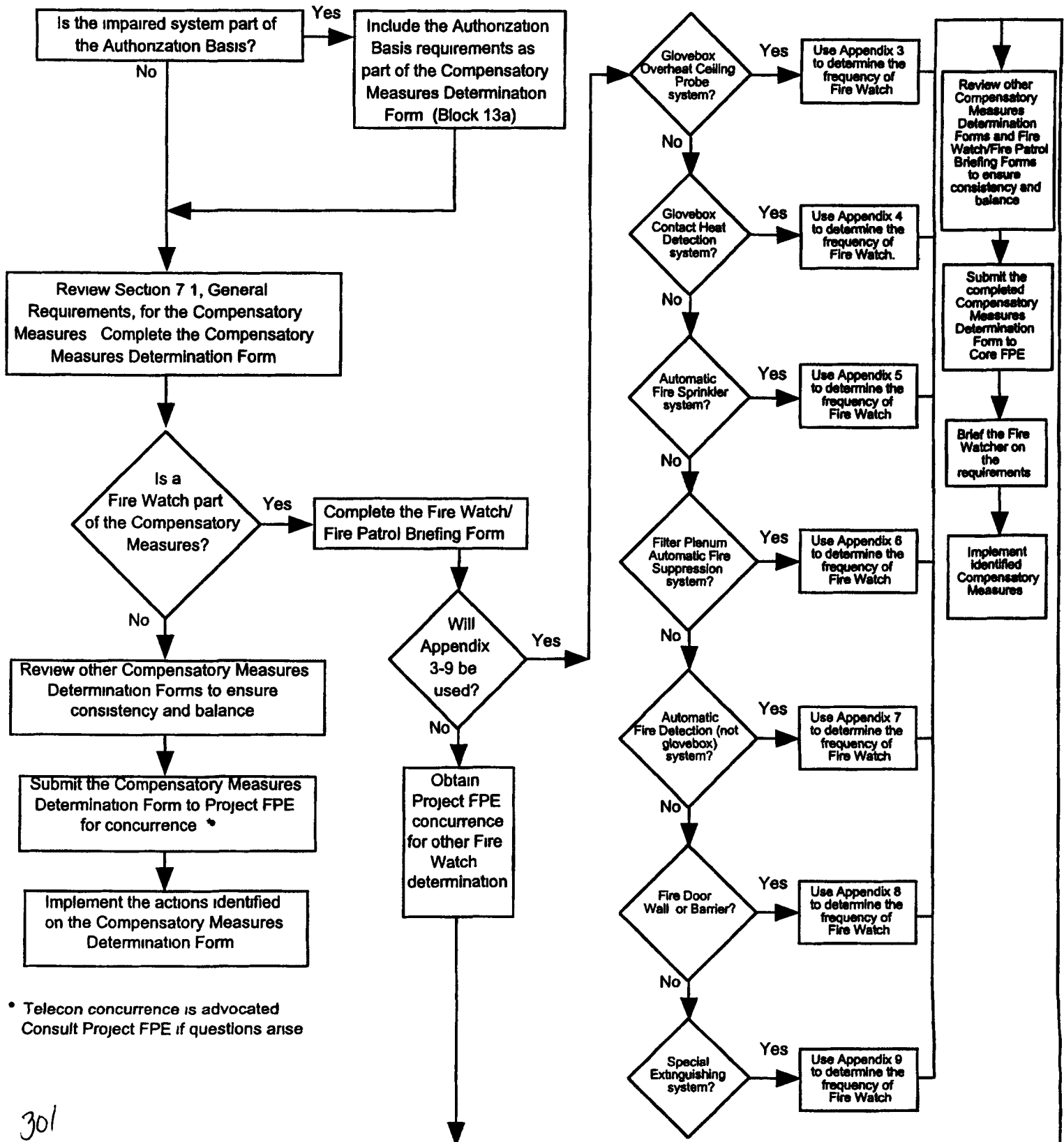
NOTE Telephone authorization and concurrence is allowable to prevent delay in approving Compensatory Measures

- 1 Enter the Impairment number
(If the impairment number is not provided contact Fire Systems Services (FSS) at X3028 during normal business hours or the Fire Department at X4337 after hours)
- 2 Enter the building number
- 3 Enter the date
- 4 Enter the time that the Compensatory Measures determination was made
- 5 Check (✓) the appropriate box for the Priority Code and the Risk Level
- 6 Enter the Alarm Delta Point number
(If the system does not have a delta number, then enter N/A)
- 7 Enter the IWCP number
- 8 Enter the FPS type
(I E Smoke Detection, Wet Pipe Sprinkler, Halon, etc)
- 9 Enter the equipment identification number
(If the equipment system does not have an ID number, then enter N/A)
- 10 Enter the location of the affected areas or equipment
- 11 Check (✓) the appropriate box for the required Compensatory Measures
- 12 Check (✓) the Decision Tree or requirement used to determine the Fire Watch requirements.
- 13 Check (✓) the type of Fire Watch that is required
13a. Document the justification used to determine the Fire Watch requirements.
- 14 Record the areas which will be monitored by the Fire Watch
- 15 Document the authorization and concurrence of the Compensatory Measures and Fire Watch
(The Facility Manager or the Shift Manager/Configuration Control Authority signature will be obtained at the time of the Compensatory Measures or the Fire Watch initiation and Project Fire Protection Engineering (FPE) within 24 hours)
The YES box for the Collective Significance Review is checked if a Collective Significance exists. Otherwise the NO box is checked
- 15a. Facsimile copy of the Compensatory Measures Determination Form to FSS at X2942
- 15b. Facsimile copy of the Compensatory Measures Determination Form to FPE at X8267
- 16 Document the work performed or the analysis performed to terminate the Compensatory Measures or Fire Watch
- 17 Document the authorization and the concurrence for terminating the Compensatory Measures or the Fire Watch
(The Facility Manager or the Shift Manager/Configuration Control Authority AND the FPE signatures will be obtained prior to terminating the Fire Watch)
- 18 Enter the date and time that the Compensatory Measures are terminated
18a. Facsimile copy of the terminated Compensatory Measures Determination Form to FSS at X2942
18b. Facsimile copy of the terminated Compensatory Measures Determination Form to FPE at X8267

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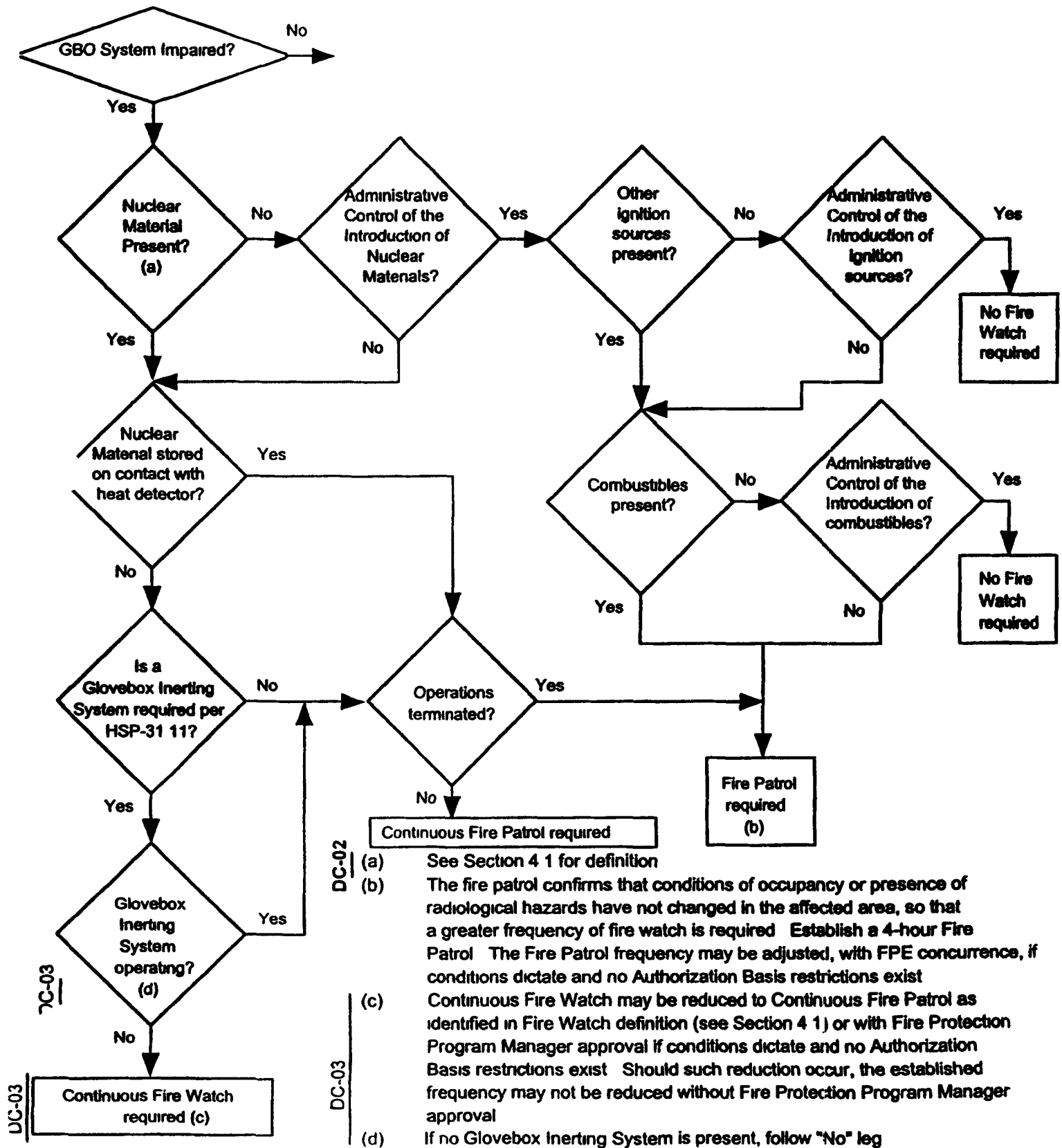
COMPENSATORY MEASURES DECISION TREE



* Telecon concurrence is advocated
Consult Project FPE if questions arise

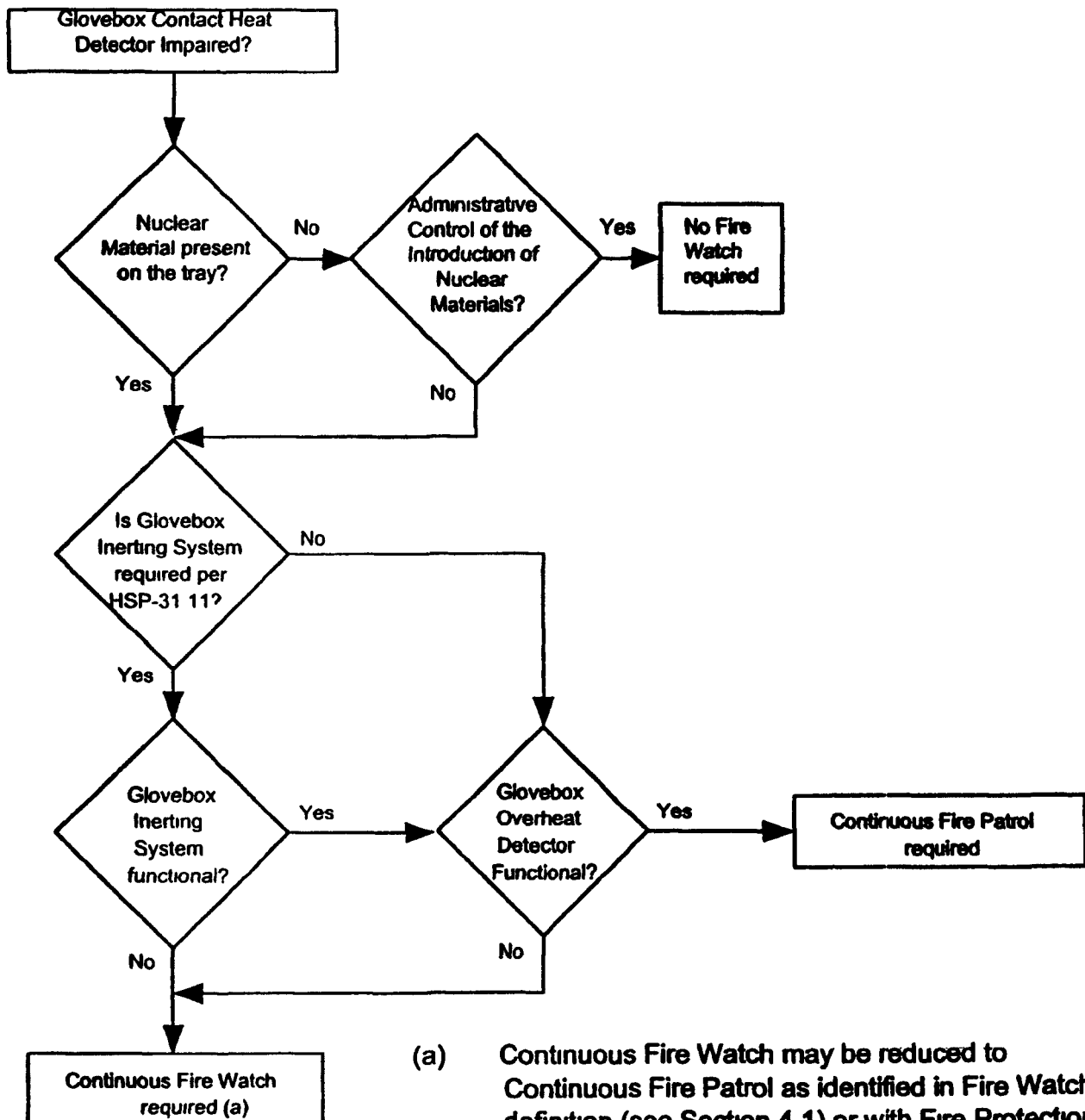
APPENDIX 3
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GLOVEBOX OVERHEAT CEILING PROBE SYSTEM DECISION TREE



APPENDIX 4
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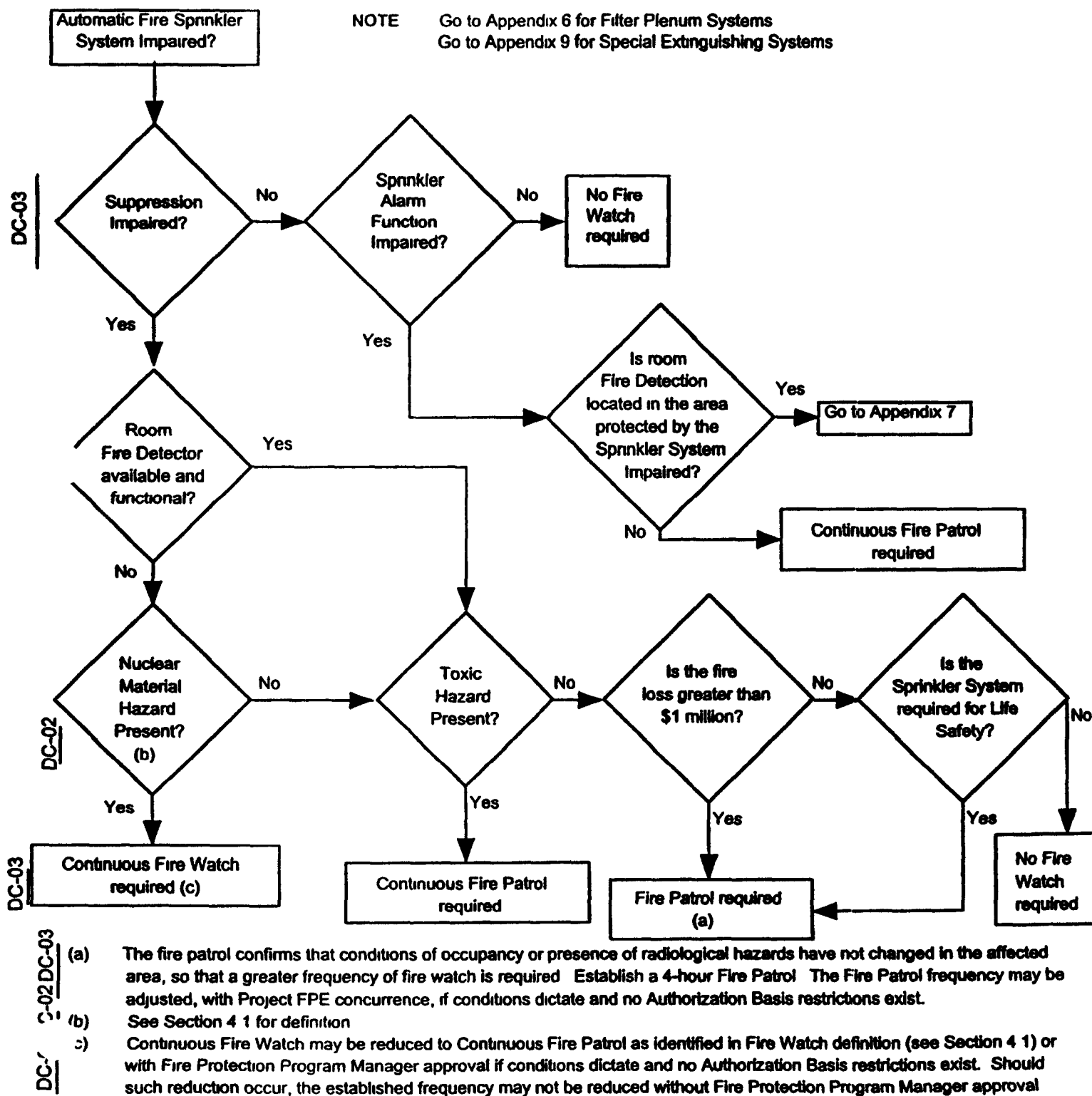
GLOVEBOX CONTACT HEAT DETECTION SYSTEM DECISION TREE



(a) Continuous Fire Watch may be reduced to Continuous Fire Patrol as identified in Fire Watch definition (see Section 4.1) or with Fire Protection Program Manager approval if conditions dictate and no Authorization Basis restrictions exist. Should such reduction occur, the established frequency may not be reduced without Fire Protection Program Manager approval.

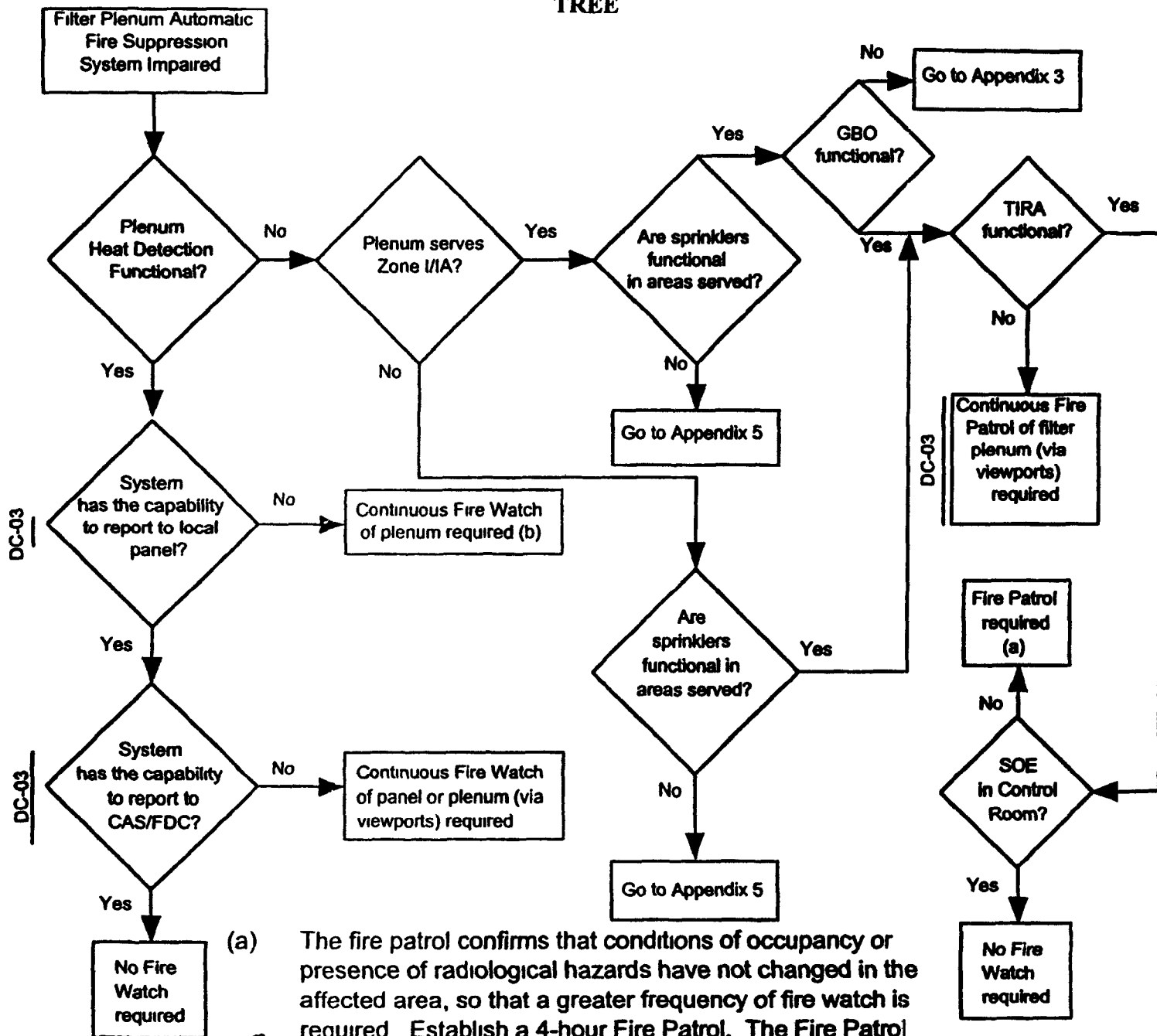
APPENDIX 5
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AUTOMATIC FIRE SPRINKLER SYSTEM DECISION TREE



APPENDIX 6
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**FILTER PLENUM AUTOMATIC FIRE SUPPRESSION SYSTEM DECISION
TREE**



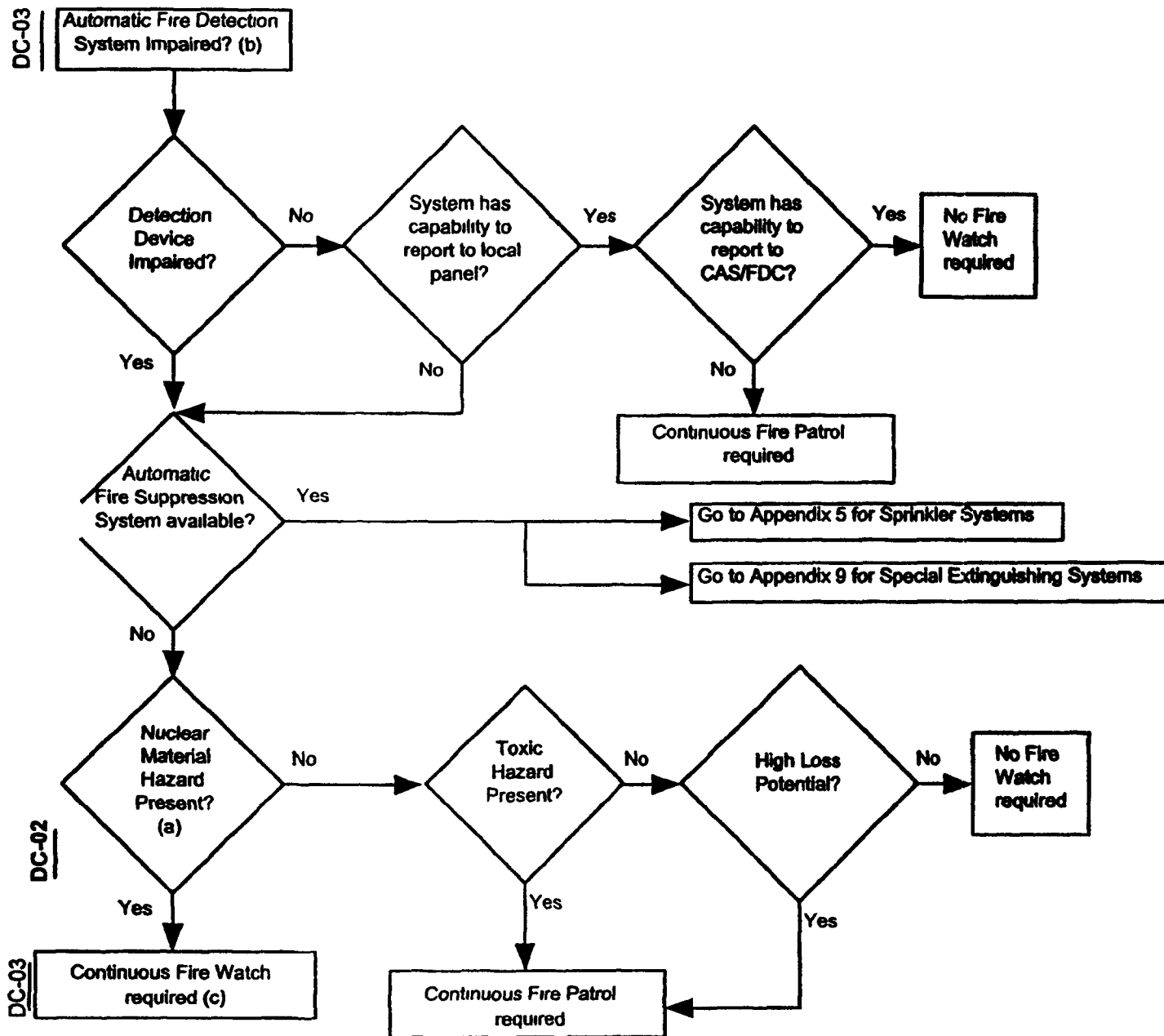
(a) The fire patrol confirms that conditions of occupancy or presence of radiological hazards have not changed in the affected area, so that a greater frequency of fire watch is required. Establish a 4-hour Fire Patrol. The Fire Patrol frequency may be adjusted, with Project FPE concurrence, if conditions dictate and no Authorization Basis restrictions exist.

(b) Continuous Fire Watch may be reduced to Continuous Fire Patrol as identified in Fire Watch definition (see Section 4.1) or with Fire Protection Program Manager approval if conditions dictate and no Authorization Basis restrictions exist. Should such reduction occur, the established frequency may not be reduced without Fire Protection Program Manager approval.

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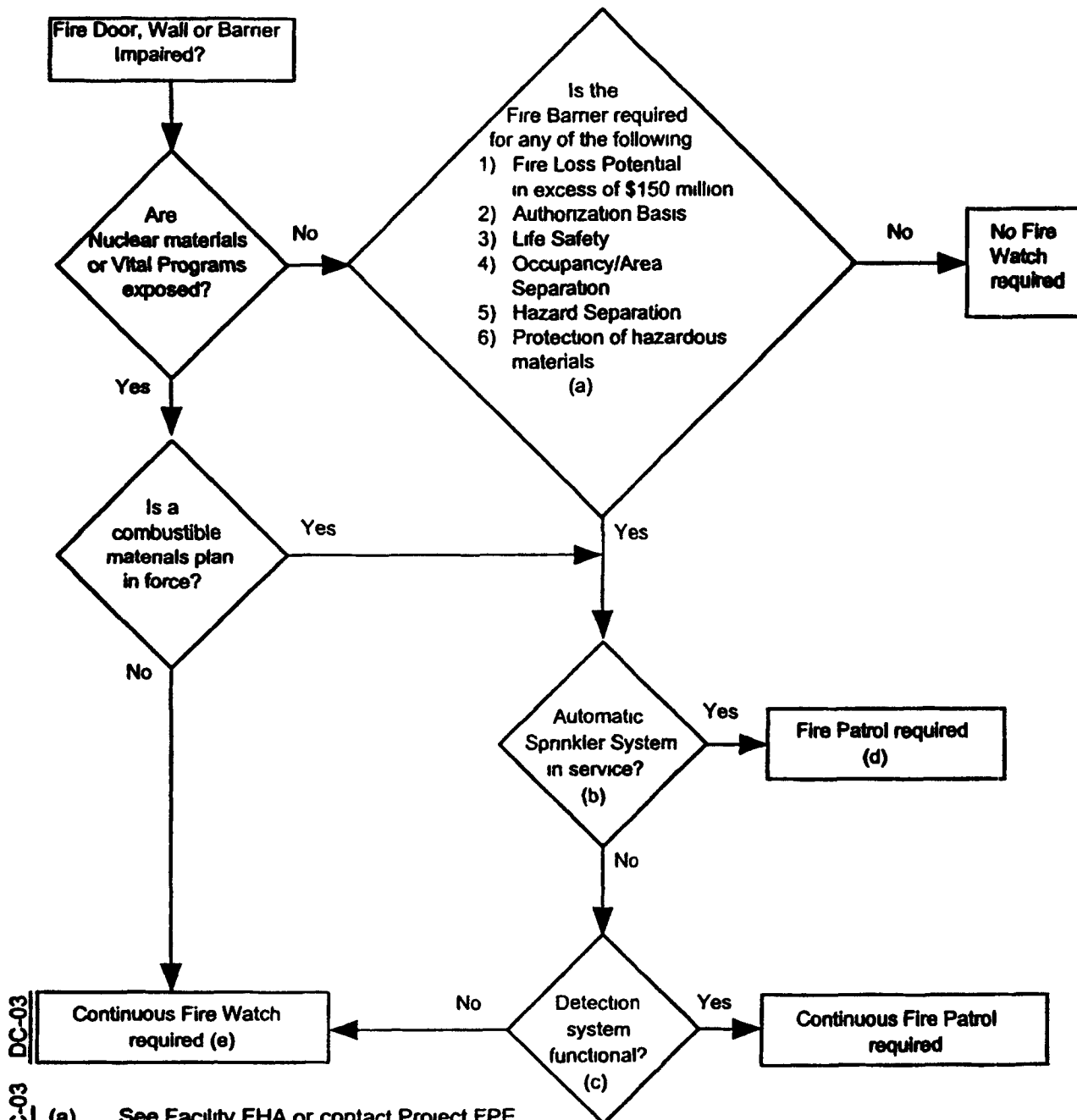
**AUTOMATIC FIRE DETECTION SYSTEM DECISION TREE
(Other Than Glovebox)**



- (a) See Section 4.1 for definition
- (b) This appendix does not apply to detection and alarm functions of automatic sprinkler systems or special extinguishing systems. See Appendix 5 for Automatic Sprinkler Systems or Appendix 9 for Special Extinguishing Systems
- (c) Continuous Fire Watch may be reduced to Continuous Fire Patrol as identified in Fire Watch definition (see Section 4.1) or with Fire Protection Program Manager approval if conditions dictate and no Authorization Basis restrictions exist. Should such reduction occur, the established frequency may not be reduced without Fire Protection Program Manager approval

APPENDIX 8
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FIRE DOOR/WALL/BARRIER DECISION TREE

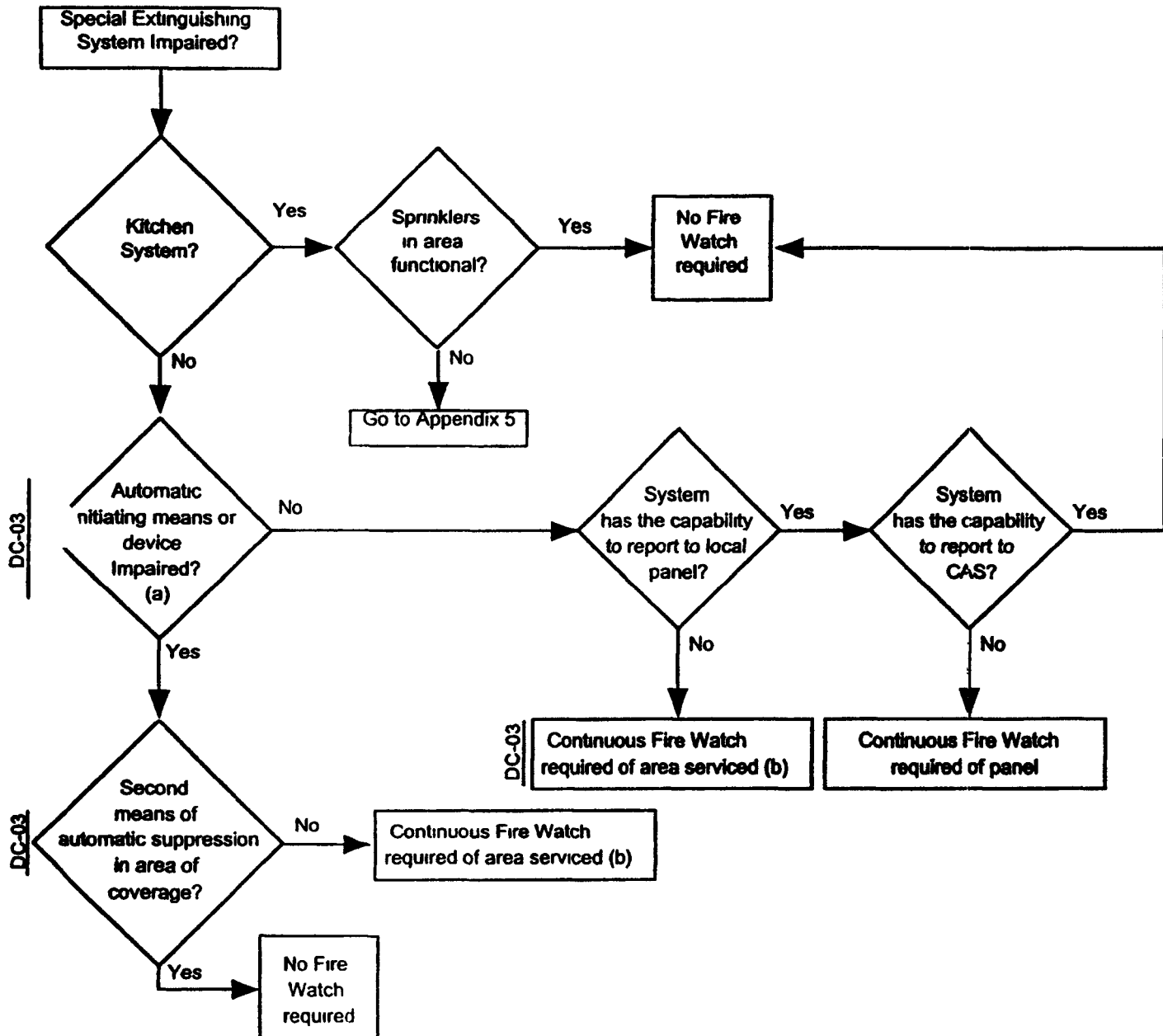


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- (a) See Facility FHA or contact Project FPE
- (b) If the facility is not sprinklered, then follow the NO branch
- (c) If a Detection System is not installed, then follow the NO branch
- (d) The fire patrol confirms that conditions of occupancy or presence of radiological hazards have not changed in the affected area, so that a greater frequency of fire watch is required. Establish a 4-hour Fire Patrol. The Fire Patrol frequency may be adjusted, with Project FPE concurrence, if conditions dictate and no Authorization Basis restrictions exist.
- (e) Continuous Fire Watch may be reduced to Continuous Fire Patrol as identified in Fire Watch definition (see Section 4.1) or with Fire Protection Program Manager approval if conditions dictate and no Authorization Basis restrictions exist. Should such reduction occur, the established frequency may not be reduced without Fire Protection Program Manager approval.

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SPECIAL EXTINGUISHING SYSTEMS



- (a) If SVA present on panel, follow the YES branch until additional information is obtained from Alarm Technicians, Fire Systems Services, or Project FPE.
- (b) Continuous Fire Watch may be reduced to Continuous Fire Patrol as identified in Fire Watch definition (see Section 4.1) or with Fire Protection Program Manager approval if conditions dictate and no Authorization Basis restrictions exist. Should such reduction occur, the established frequency may not be reduced without Fire Protection Program Manager approval.

APPENDIX 10

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FIRE WATCH/FIRE PATROL BRIEFING FORM

DATE ____/____/____	BLDG ____	TIME ____	FAX NO ____
LOCATION OF FIRE WATCH/FIRE PATROL (ROOM #, FLOOR, PLENUM #, etc) _____ _____			
FREQUENCY OF FIRE WATCH/FIRE PATROL <input type="checkbox"/> Continuous Fire Watch <input type="checkbox"/> Fire Patrol (check appropriate time interval below) <input type="checkbox"/> Continuous (50 min of each hour) <input type="checkbox"/> 4-hour <input type="checkbox"/> 1-hour <input type="checkbox"/> 2-hour <input type="checkbox"/> 8-hour <input type="checkbox"/> 12-hour <input type="checkbox"/> 24-hour <input type="checkbox"/> Other (specify and justify below) _____			
REASON FOR FIRE WATCH/FIRE PATROL _____ _____			
BASELINE AREA INSPECTION INFORMATION (if applicable) _____ _____			
FIRE WATCHER RESPONSIBILITIES <input type="checkbox"/> NOTIFICATION ACTIONS (check all that required) <input type="checkbox"/> Workers in immediate vicinity <input type="checkbox"/> Job Supervisor <input type="checkbox"/> Facility Management <input type="checkbox"/> Fire Department <input type="checkbox"/> Others (specify) _____ <input type="checkbox"/> METHODS OF NOTIFICATION <input type="checkbox"/> Fire Phone <input type="checkbox"/> Station <input type="checkbox"/> Telephone <input type="checkbox"/> Two-way Radio <input type="checkbox"/> Specific Action to be taken each tour outlined below _____ _____			
FORM COMPLETED BY NAME (PRINT) _____ Ext. _____ Pager _____			
FIRE WATCHERS SIGNATURES (Indicates full understanding of performance requirements) _____ _____			

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